

**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),

**Barnhardt Manufacturing Company**

is authorized to discharge from a facility located at

**Barnhardt Manufacturing Company  
247 Main Road  
Colrain, MA 01340**

to receiving water named

**North River (Deerfield River Watershed)**

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

This permit shall become effective on the first day of the calendar month following 60 days after signature if comments are received. If no comments are received, this permit shall become effective following 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 March 26, 2001, modified on August 17, 2004 and expired on May 25, 2006.

This permit consists of 10 pages in Part I including effluent limitations, monitoring requirements, 7 pages in Attachment 1 – Freshwater Chronic Toxicity Test Procedure and Protocol, and 25 pages in Part II including Standard Conditions.

Signed this 26<sup>th</sup> day of October, 2010

**/S/SIGNATURE ON FILE**

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

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

**PART I**

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

1. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge treated process water through **Outfall Serial Number 001** to the North River. Such discharge shall: 1) be limited and monitored by the permittee as specified below; and 2) not cause a violation of the State Surface Water Quality Standards of the receiving water.

Effluent Characteristic	Units	Discharge Limitation		Monitoring Requirements <sup>1</sup>	
		Average Monthly	Maximum Daily	Measurement Frequency <sup>2</sup>	Sample Type
Flow <sup>3</sup>	MGD	Report	0.89	Continuous	Recorder
pH <sup>10</sup>	SU	6.5 – 9.0		1/Day	Grab
Production Rate <sup>11</sup>	lbs/day	Report	Report	1/Day	Estimate
BOD <sub>5</sub>	lbs/day	300	510	1/Month	Composite <sup>4</sup>
Total Suspended Solids (TSS)	lbs/day	250	510	1/Month	Composite <sup>4</sup>
COD	lbs/day	3,807	7,614	1/Quarter	Composite <sup>4</sup>
Sulfide, Total	lbs/day	1.0	2.0	1/Quarter	Grab
Chromium, Total <sup>13</sup>	lbs/day	Report	1.1	1/Quarter	Composite <sup>4</sup>

Effluent Characteristic	Units	Discharge Limitation		Monitoring Requirements <sup>1</sup>	
		Average Monthly	Maximum Daily	Measurement Frequency <sup>2</sup>	Sample Type
Phenols, Total	lbs/day	Report	1.0	1/Quarter	Grab
Ammonia-Nitrogen (as N)	lbs/day	----	42	1/Quarter	Composite <sup>4</sup>
TKN	mg/L	----	Report	1/Month	Composite <sup>4</sup>
Nitrite-Nitrate (as N)	mg/L	----	Report	1/Month	Composite <sup>4</sup>
Total Phosphorus	mg/L	----	Report	1/Quarter	Composite <sup>4</sup>
E. coli (April 1 <sup>st</sup> – October 31 <sup>st</sup> ) <sup>12</sup>	cfu/100 ml	126	409	1/Week	Grab
Total Copper	mg/L	----	Report	1/Month	Composite <sup>4</sup>
Temperature	°F	Report	Report	1/Month	Grab

Effluent Characteristic	Units	Discharge Limitation		Monitoring Requirements <sup>1</sup>	
		Average Monthly	Maximum Daily	Measurement Frequency <sup>2</sup>	Sample Type
Whole Effluent Toxicity (WET)					
Acute LC50 <sup>5,6,8</sup>	%		≥ 100	1/Quarter	Composite <sup>4</sup>
Chronic C-NOEC <sup>5,7,8</sup>	%		≥ 5	1/Quarter	Composite <sup>4</sup>
Hardness <sup>9</sup>	mg/L		Report	1/Quarter	Composite <sup>4</sup>
Alkalinity <sup>9</sup>	mg/L		Report	1/Quarter	Composite <sup>4</sup>
pH <sup>9</sup>	SU		Report	1/Quarter	Composite <sup>4</sup>
Specific Conductance <sup>9</sup>	µmhos/cm		Report	1/Quarter	Composite <sup>4</sup>
Total Solids <sup>9</sup>	mg/L		Report	1/Quarter	Composite <sup>4</sup>
Total Ammonia Nitrogen (as N) <sup>9</sup>	mg/L		Report	1/Quarter	Composite <sup>4</sup>
Total Organic Carbon <sup>9</sup>	mg/L		Report	1/Quarter	Composite <sup>4</sup>
Total Residual Chlorine <sup>9</sup>	mg/L		Report	1/Quarter	Composite <sup>4</sup>
Dissolved Oxygen <sup>9</sup>	mg/L		Report	1/Quarter	Composite <sup>4</sup>
Total Cadmium <sup>9</sup>	mg/L		Report	1/Quarter	Composite <sup>4</sup>
Total Chromium <sup>9</sup>	mg/L		Report	1/Quarter	Composite <sup>4</sup>
Total Lead <sup>9</sup>	mg/L		Report	1/Quarter	Composite <sup>4</sup>
Total Copper <sup>9</sup>	mg/L		Report	1/Quarter	Composite <sup>4</sup>
Total Zinc <sup>9</sup>	mg/L		Report	1/Quarter	Composite <sup>4</sup>
Total Nickel <sup>9</sup>	mg/L		Report	1/Quarter	Composite <sup>4</sup>
Total Aluminum <sup>9</sup>	mg/L		Report	1/Quarter	Composite <sup>4</sup>
Total Magnesium <sup>9</sup>	mg/L		Report	1/Quarter	Composite <sup>4</sup>
Total Calcium <sup>9</sup>	mg/L		Report	1/Quarter	Composite <sup>4</sup>

See pages 5 –6 for explanation of footnotes.

**(Part I.A.1, Continued)****Footnotes:**

1. All samples shall be tested in accordance with the procedures in 40 CFR §136, unless specified elsewhere in the permit. All sampling shall be representative of the effluent that is discharged through Outfall 001 to the North River. All required effluent samples shall be collected immediately after the final filtration unit. A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of the month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report 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. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP.
2. Sampling frequency of 1/day is defined as the sampling of one (1) discharge event during each 24-hour period, when discharge occurs. Sampling frequency of 1/month is defined as the sampling of one (1) discharge event in each calendar month, when discharge occurs. Sampling frequency of 1/quarter is defined as the sampling of one (1) discharge event in each calendar quarter, when discharge occurs. Quarterly samples shall be collected during the second weeks in January, April, July, and October. The permittee shall submit the results to EPA of any additional testing done to that required herein, if it is conducted in accordance with EPA approved methods consistent with the provisions of 40 CFR §122.41(l)(4)(ii).
3. For flow, report maximum daily effluent flow for all operating dates and average monthly effluent flow.
4. A 24-hour composite will consist of twenty-four (24) grab samples collected at hourly intervals during a twenty-four hour period (e.g., 0700 Monday to 0700 Tuesday), combined proportionally to flow.
5. The permittee shall conduct quarterly chronic (and modified acute) toxicity tests. The permittee shall test the daphnid, Ceriodaphnia dubia. Samples shall be collected during the months of January, April, July, and October. The test results shall be submitted by the last date of the following month. The tests must be performed in accordance with test procedures and protocols specified in Attachment 1 of this permit. After submitting two years of consecutive sets of whole effluent toxicity (WET) test results, all of which demonstrate compliance with the WET permit limits (at least 8 consecutive tests), the permittee may request a reduction in the frequency of required WET testing to no less than two times per year. The permittee is required to continue testing at the frequency specified in the permit until notice is received by certified mail from EPA that the WET testing requirement has been changed.
6. LC50 is defined as the concentration of 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 a 50% mortality rate.
7. C-NOEC (chronic-no observed effect concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival, or reproduction at a specific time of observation as determined from hypothesis testing where the results exhibit a linear dose-response relationship. However, where the test results do not exhibit a linear dose-response relationship, the permittee must report the lowest concentration where there is no observable effect. The effluent C-NOEC limit is based upon effluent flow from the treatment facility. This is a maximum daily limit derived as a percentage of the inverse of the dilution factor. Based on the chronic dilution factor of 20.2, the C-NOEC maximum daily limit is 5%.
8. 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 Section IV (Dilution Water) of Attachment 1 in order to obtain permission to use an alternate dilution water. In lieu of individual approvals for alternate dilution water required in Attachment 1, EPA-New England has developed a Self-Implementing Alternative Dilution Water Guidance document (called "Guidance Document") which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. If this Guidance Document is revoked, the permittee shall revert

to obtaining approval as outlined in Attachment 1. The "Guidance Document" has been sent to all permittees with their annual set of DMRs and Revised Updated Instructions for Completing EPA's Pre-Printed NPDES Discharge Monitoring Report (DMR) Form 3320-1 and is not intended as a direct attachment to this permit. Any modification or revocation to this "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 1.

9. For each Whole Effluent Toxicity (WET) test the permittee shall report on the appropriate Discharge Monitoring Report (DMR), the concentration of the hardness, total ammonia nitrogen as nitrogen, alkalinity, pH specific conductance, total solids, total organic carbon, total residual chlorine, dissolved oxygen, aluminum, cadmium, chromium, copper, lead, nickel, zinc, magnesium and calcium found in the 100 percent effluent sample. Metals shall be reported as total recoverable concentrations. The permittee should note that all chemical parameter results must still be reported in the appropriate toxicity report. The permittee shall also document the outfall sampling locations and dilution water sampling location by providing either the USGS coordinates and/or a map of these locations.
10. See Part I.A.3
11. Total production rate of finished goods in lbs/day.
12. The permittee may submit a written request to the EPA requesting a reduction in the frequency (to not less than once per month) of required testing for E. coli, after completion of an entire season (April 1<sup>st</sup> – October 31<sup>st</sup>) of weekly successive monitoring results of effluent, all of which must demonstrate levels of E. coli below the permit effluent limitations. Until written notice is received by certified mail from the EPA indicating that the E. coli testing requirement has been changed, the permittee is required to continue testing at the frequency specified in the permit.
13. The permittee may submit a written request to the EPA requesting a reduction in the frequency (to not less than once per year) of required testing for chromium, after completion of a minimum of eight (8) successive monitoring results of effluent, taken over a period of two (2) years, all of which must demonstrate levels of chromium below the 1.1 lbs/day daily maximum limit. Until written notice is received by certified mail from the EPA indicating that the chromium testing requirement has been changed, the permittee is required to continue testing at the frequency specified in the permit.

**Part I.A. (Continued)**

2. The discharge shall not cause objectionable discoloration of the receiving waters.
3. The pH of the effluent shall not be less than 6.5 or greater than 9.0 at any time, unless these values are exceeded due to natural causes.
4. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time in other than trace amounts.
5. The permittee shall not use fungicides or slimicides containing trichlorophenol or pentachlorophenol.
6. No intake water shall be used solely for cooling purposes.
7. The rise in temperature of the receiving water due to a discharge shall not exceed 3°F.
8. The discharge shall not contain materials in concentrations or combinations which are hazardous or toxic to human health, aquatic life of the receiving surface waters or which would impair the uses designated by its classification.
9. EPA may modify this permit in accordance with EPA regulations in 40 Code of Federal Regulations (CFR) §122.62 and §122.63 to incorporate more stringent effluent limitations, increase the frequency of analyses, or impose additional sampling and analytical requirements.
10. 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 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 µg/l);
    - (2) Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2,4-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 C.F.R. §122.21(g)(7); or
    - (4) Any other notification level established by the Director in accordance with 40 C.F.R. §122.44(f).

- b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following “notification levels”:
  - (1) Five hundred micrograms per liter (500 µg/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 C.F.R. §122.21(g)(7).
  - (4) Any other notification level established by the Director in accordance with 40 C.F.R. §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.

#### 11. 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.

### **B. REOPENER CLAUSES**

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.

### **C. SPECIAL CONDITIONS AND REQUIREMENTS**

1. A plan shall be developed which establishes Best Management Practices (BMPs) to be followed in operating the facility, cleaning of any equipment, and disposing of any liquid and solid waste. The purpose of the plan is to identify and to describe the practices which minimize the amounts of pollutants (biological and chemical) discharged to surface waters.

- a. The BMP plan shall be completed within 120 days after the effective date of this permit and submitted to the MassDEP and the EPA Region 1. The plan should be modified as necessary during the life of the permit. A current copy of the plan shall be maintained at the facility.
  - b. The BMP plan is a fully enforceable element of this permit.
  - c. The permittee shall amend the BMP plan within thirty (30) days following a change in facility design, construction, operation, or maintenance which affects the potential for the discharge of pollutants into surface waters. A letter summarizing any amendments of the BMP plan shall be submitted to EPA and MassDEP as in subparagraph 1.b above.
  - d. The permittee shall develop and implement site specific BMPs in order to reduce and/or eliminate the acute toxicity of the discharge. The BMPs shall include, at a minimum, investigation of the following alternative treatments:
    - i. Replacement of chemical scouring using sodium hydroxide with enzymatic scouring; and
    - ii. Use of micro/ultrafiltration using membranes to recover sodium hydroxide from spent solutions, with subsequent reuse of the recovered alkaline solution in facility processes.
  - e. The permittee shall develop and implement site specific BMPs in order to reduce and/or eliminate the source(s) of nitrogen at the facility.
2. Within 1 year of the effective date of the permit, the permittee shall complete an evaluation of alternative methods of operating the existing wastewater treatment facility to optimize the removal of nitrogen, and submit a report to EPA and MassDEP documenting this evaluation and presenting a description of recommended operational changes. The permittee shall implement the recommended operational changes in order to maintain the existing mass discharge loading of total nitrogen. The annual average total nitrogen load from this facility (for the period of June 2001 – September 2009) is estimated to be 66 lbs/day.

The permittee shall also submit an annual report to EPA and MassDEP 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. MONITORING AND REPORTING**

Monitoring results obtained during the previous month shall be summarized for each month and reported on separate Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the following month. Signed and dated originals of these, and all other reports required herein, shall be submitted to EPA at the following address:

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

Signed and dated Discharge Monitoring Report Form(s) and all other reports, except the Whole Effluent Toxicity (WET) report, required by this permit shall also be submitted to the State at the following addresses:

Massachusetts Department of Environmental Protection  
Western Regional Office  
Bureau of Waste Prevention  
436 Dwight Street  
Springfield, Massachusetts 01103

and

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

**E. STATE PERMIT CONDITIONS**

1. This discharge permit is issued jointly by the EPA and the MassDEP under Federal and State law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MassDEP pursuant to M.G.L. Chap. 21, §43 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.
2. 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 a 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.

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
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 # MA0003697

PUBLIC NOTICE DATES:

NAME AND ADDRESS OF APPLICANT:

**Barnhardt Manufacturing Company  
P.O. Box 3  
Colrain, MA 01340**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**Barnhardt Manufacturing Company  
247 Main Road  
Colrain, MA 01340**

RECEIVING WATER: North River (Deerfield River Watershed MA 33-06)

CLASSIFICATION: B (Cold Water Fishery)

SIC CODES: 2299 (Textile Goods, NEC)

**TABLE OF CONTENTS**

**I. PROPOSED ACTION**..... 2

**II. TYPE OF FACILITY**..... 3

**III. SUMMARY OF MONITORING DATA**..... 3

**IV. DISCHARGE LOCATION, RECEIVING WATER CLASSIFICATION, EXISTING WATER QUALITY, and STREAM FLOW** ..... 3

**A. Waterbody Classification and Usage**..... 3

**B. Water Quality Assessment of the Receiving Waters and 303d/TMDL Listing** ..... 3

**C. River Flow and Dilution Calculation**..... 4

**V. DESCRIPTION OF FACILITY AND WASTEWATER TREATMENT PLANT**..... 5

**VI. PERMIT BASIS AND EXPLANATION OF EFFLUENT LIMIT DERIVATIONS** ... 6

**A. General Requirements** ..... 6

**B. Technology-Based Requirements**..... 7

**C. Water Quality-Based Requirements**..... 8

**D. Anti-Backsliding** ..... 9

**E. Anti-Degradation**..... 9

**F. Effluent Limitations** ..... 9

        1. Outfall 001 ..... 12

        2. Special Conditions and Requirements..... 23

**VII. ENDANGERED SPECIES ACT** ..... 23

**VIII. ESSENTIAL FISH HABITAT** ..... 24

**IX. STATE CERTIFICATION REQUIREMENTS**..... 24

**X. ADMINISTRATIVE RECORD, PUBLIC COMMENT PERIOD, HEARING REQUESTS, AND PROCEDURES FOR FINAL DECISION** ..... 25

**XI. EPA & MassDEP CONTACTS** ..... 25

**XII. ATTACHMENTS** ..... 26

**A. Site Location GIS Map**..... 26

**B. DMR Data Summary** ..... 26

**I. PROPOSED ACTION**

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) for the re-issuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge treated process water into the designated receiving water. The existing permit was issued to BBA Nonwovens Simpsonville, Inc. on March 26, 2001 (the current permit), became effective 60 days later, was modified on August 17, 2004, and expired on May 26, 2006. EPA received a permit renewal application from BBA Nonwovens Simpsonville, Inc. on November 22, 2005. Since the permit renewal application was deemed timely and complete by EPA, the permit has been administratively continued. The facility ownership changed from BBA Nonwovens Simpsonville, Inc. to Barnhardt Manufacturing Company and the NPDES permit and the pending permit renewal application were transferred to Barnhardt Manufacturing effective June 29, 2007.

## II. TYPE OF FACILITY

Barnhardt Manufacturing Company (Barnhardt) is a textile goods processing facility that processes raw cotton by cleaning and bleaching the cotton and includes finishing the cotton, dry processing and final packaging of the cotton products for distribution. The facility is located in Colrain, MA and discharges its treated effluent to the North River just upstream of the Route 112 bridge (see Attachment A).

## III. SUMMARY OF MONITORING DATA

A quantitative description of the discharges in terms of significant effluent parameters based on discharge monitoring reports (DMRs) submitted for Outfall 001 during the time period from June 2001 to September 2009 was reviewed and used in the development of the draft National Pollutant Discharge Elimination System (NPDES) permit (Draft Permit). A summary of the DMR data is provided in Attachment B to this Fact Sheet.

## IV. DISCHARGE LOCATION, RECEIVING WATER CLASSIFICATION, EXISTING WATER QUALITY, and STREAM FLOW

### A. Waterbody Classification and Usage

The Barnhardt Manufacturing wastewater treatment facility discharges into the North River at River Mile 2.7 from the confluence with the Deerfield River. The segment into which it discharges is denoted by MassDEP as Segment MA33-06 (from the confluence of the East and West branches of the North River in Colrain, MA to the confluence with the Deerfield River in Shelburne/Charlemont, MA). The segment is classified as a Class B-cold water fishery river segment by the Massachusetts Surface Water Quality Standards (314 CMR 4.05(3)(b) and 4.06 Table 5). *These waters are designated as habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. Where designated they shall be suitable as a source of public water supply with appropriate treatment. They 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* (314 CMR 4.05(3)(b)).

### B. Water Quality Assessment of the Receiving Waters and 303d/TMDL Listing

The MassDEP evaluated the water quality and biological health in the segment as part of its assessment work and presented the findings in the report, *Deerfield River Watershed 2000 Water Quality Assessment Report* (Oct 2004; Report # 33-AC-1; CN087.0). The report rated the segment as "support" with an alert status for aquatic life and primary contact; "non-assessed" for fish consumption and "support" for secondary contact and aesthetics. The alert status for aquatic life was related to the effluent toxicity from then named BBA Nonwovens discharge and the potential impact on flow in the 0.6 mile reach of river that is bypassed via a canal. The alert status for primary contact was related to slightly elevated bacteria counts in surveys conducted during wet weather.

The MassDEP has listed the segment in “Category 2- Attaining Some Uses; other Uses Not Assessed” in the 2008 report, *Massachusetts Year 2008 Integrated List of Waters* (December 2008; Report CN: 281.1). The uses attained include: aquatic life, primary contact, secondary contact, aesthetics. The segment is not listed in “Category 5” which requires a “Total Maximum Daily Load” (TMDL) to be developed to address any non-attainment parameters. EPA approved the 2008 Clean Water Act section 303(d) list on May 4, 2009.

### C. River Flow and Dilution Calculation

The United States Geological Survey (USGS) maintains a stream flow gage in the North River in the Village of Shattuckville, Massachusetts. The gage is located at river mile 1.3, approximately 1.4 miles downstream of the Barnhardt Manufacturing discharge. This close vicinity of the gage to the discharge location provides good flow dynamic evaluations at the discharge site. The table below shows the vital data from the gage station.

**Table 1. USGS Data for North River at Shattuckville, MA\***

USGS Gage Number	Drainage Area (mi <sup>2</sup> )	Period of Record	Annual Mean Flow (cfs)	7Q10 (cfs)	1Q10 (cfs)	Harmonic Mean (cfs)
01169000	89.0	1939-2005**	189	8.457	6.76	54.6

\* All information, except 7Q10, are from *Water Resources Data Massachusetts and Rhode Island Water Year 2005*; 7Q10 is from August 1998 USGS statistical update disk; 1Q10 is from USGS calculations based on period of mean discharges during climatic years 1941 – 2008 (67 years); harmonic mean is from USGS calculations based on period of daily mean discharges during water years 1941 through 2008 (basically about 68 years).

\*\*Gage still active; records available for this period.

The 7Q10, or the 7-day mean stream low flow with 10-year recurrence interval, is the base flow used to calculate the chronic effluent limits in NPDES permits (314 CMR 4.03(3)(a)). The 7Q10 flow in the North River at the point of the Barnhardt Manufacturing WWTP discharge is determined by using the 7Q10 value at the North River USGS gage (01169000). No adjustment is made for the very small additional drainage area between the discharge and the gage. The long-term operation of the facility’s discharge and the location of the gage almost immediately downstream from the discharge location produce an accurate long-term evaluation of the 7Q10 dynamics.

The 1Q10, or the 1-day mean stream low flow with 10-year recurrence interval, is the base flow used to calculate the acute effluent limits in NPDES permits.<sup>1</sup> The 1Q10 flow in the North River at the point of the Barnhardt Manufacturing WWTP discharge is determined by using the 1Q10 value at the North River USGS gage (01169000).

<sup>1</sup> Technical Support Document for Water Quality-based Toxics Control, p. 130.

For industrial dischargers, the permit writer has discretion on how to calculate the dilution factor. Review of recently issued permits, such as NPDES Permit No. NH0000230 for Monadnock Paper Mills, Inc., and MA0000469 for Seaman Paper Company, reveals that the average monthly effluent flow was used to calculate the chronic dilution factor and the maximum daily effluent flow was used to calculate the acute dilution factor.

Therefore, the chronic dilution factor used in some of the permit limitation calculations is based upon the 7Q10 at the gage and the monthly average effluent flow [0.27 MGD (0.418 cfs)].<sup>2</sup> The chronic dilution factor for Barnhardt Manufacturing WWTP is as follows:

$$\begin{aligned} 7Q10 \{river\} / \text{monthly average effluent flow} &= \text{dilution factor} \\ 8.457 \text{ cfs} / 0.418 \text{ cfs} &= 20.2 \end{aligned}$$

The acute dilution factor used in some of the permit limitation calculations is based upon the 1Q10 at the gage and the maximum effluent flow [0.89 MGD (1.38 cfs)]. The acute dilution factor for Barnhardt Manufacturing WWTP is as follows:

$$\begin{aligned} 1Q10 \{river\} / \text{daily maximum effluent flow} &= \text{dilution factor} \\ 6.76 \text{ cfs} / 1.38 \text{ cfs} &= 4.90 \end{aligned}$$

The effluent flow is normally added to the base stream flow to determine total in-stream flow at the point of discharge. However, the draft permit has reduced the flow limit (see Part VI.F.1.a, below) to equal the flow allowed under the facility's Water Management Act registration [0.89 MGD (1.38 cfs)], since the water used in the process and treated at the WWTP for discharge is flow diverted from the river. Therefore, the effluent is not added to the river base flow to determine base 7Q10 and 1Q10 flow, since the flow diverted from the river is essentially the effluent flow. The domestic flow added to the treatment system from private homes is minimal (approximately 8,000 gallons per day) and therefore is also not included in the calculation.

## V. DESCRIPTION OF FACILITY AND WASTEWATER TREATMENT PLANT

Wastewater at Barnhardt is generated in the cleaning process of the cotton fiber preparation and hydrogen peroxide bleaching. In addition, wastewater from approximately 21 homes in the Village of Griswoldville is treated at the facility. The process water used at the facility is withdrawn from the North River and is filtered by sand filters and micro-cartridge filters prior to use. The facility is authorized to withdraw water from the North River under a Massachusetts Department of Environmental Protection (MassDEP) Water Management Act registration (#10306601). The authorized withdrawal is 0.89 million gallons per day (MGD). The permit was reissued effective January 1, 2008 and will expire December 31, 2017. The recent average withdrawal volumes were significantly below their registered limit: 0.15 MGD in 2005, 0.16 MGD in 2007 and 0.22 MGD in 2008. A report dated December 22, 2009 submitted by Cushing, Jammallo, and Wheeler, Inc., on behalf of Barnhardt, states that all cooling water used

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<sup>2</sup> Monthly average effluent flow calculated based on data collect from June 2001 through September 2009, see Attachment B.

at the facility is recycled back into the process water stream. As such, Barnhardt does not intake any water solely for cooling purposes.

At the facility, cotton is first cleaned mechanically (to remove seeds, leaves, etc.) and then treated with sodium hydroxide, followed by a rinse with a surfactant and hot water. The cotton fiber is then bleached with hydrogen peroxide (chlorine is not used) and “soured” to lower the pH. Excess or “residual” water is removed from the cotton using a centrifuge. This residual water is sent to the wastewater treatment system for treatment.

The wastewater treatment facility treats process wastewater and a small volume of domestic wastewater and utilizes an extended aeration, activated sludge system. The treatment process consists of the following treatment units: mixing of process and domestic wastewaters; screening; addition of sulfuric acid to reduce the incoming wastewater pH of 8.0 – 8.5 SU to a neutral level of 7.0; aeration in a 3,000,000 gallons aerated lagoon; clarification in parallel 250,000 gallon clarifiers; processing of sludge to remove water with a belt filter press; sludge disposal at a local farm for use in land application.

Quantitative descriptions of the discharge in terms of production and effluent flow and effluent data during the time period from June 2001 to September 2009 may be found in Attachment B of this fact sheet. The average monthly flow varied from 0.14 million gallons per day (MGD) to 0.38 MGD. For calendar year 2008, the overall monthly average flow was 0.22 MGD or 220,000 gallons per day (gpd). This flow is significantly less than was historically treated since the wastewater treatment facility went on-line in 1972. This decrease is due to water conservation efforts, the closure of the Kendall/AF&F facility in 1998, which also contributed wastewater, and a reduction in the production levels at the Barnhardt Manufacturing facility.

## **VI. PERMIT BASIS AND EXPLANATION OF EFFLUENT LIMIT DERIVATIONS**

The effluent limitations, monitoring requirements, and any implementation schedule, if required, may be found in Part 1 (Effluent Limitations and Monitoring Requirements) of the Draft Permit. The permit re-application is part of the administrative file (Permit No. MA0003697).

### **A. General Requirements**

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a 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. The draft permit was developed in accordance with various statutory and regulatory requirements established pursuant to the CWA and applicable State regulations. During development, EPA considered the most recent technology-based treatment requirements, water quality-based requirements, and all limitations and requirements in the current/existing permit. The regulations governing the EPA NPDES permit program are generally found at 40 CFR Parts 122, 124, 125, and 136. The general conditions of the draft permit are based on 40 CFR §122.41 and consist primarily of management requirements common to all permits. The effluent monitoring requirements have

been established to yield data representative of the discharge under authority of Section 308(a) of the CWA in accordance with 40 CFR §122.41(j), §122.44(i), and §122.48.

## **B. Technology-Based Requirements**

Subpart A of 40 CFR §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.

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. In general, technology-based effluent guidelines for non-POTW facilities must have been complied with as expeditiously as practicable but in no case later than three years after the date such limitations were 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.

The Effluent Limit Guidelines (ELGs) establish applicable limitations for existing dischargers representing; 1) best practicable control technology currently available (BPT) for conventional pollutants, 2) best conventional pollutant technology economically achievable (BCT) for conventional pollutants, and 3) best available technology economically achievable (BAT) for toxic and non-conventional pollutants. The ELG regulations establish limitations and monitoring requirements on the final outfall to the receiving waterbody as well as internal waste stream(s) as applicable. The ELGs also establish limitations based on several methodologies including monthly average and/or daily maximum mass limits based on the quantity of product produced or concentration limitations based on BPT, BCT or BAT.

EPA established minimum technology requirements in the “Textile Mills Point Source Category” (40 CFR 410) which are applicable to the Barnhardt Manufacturing operations in the form of effluent guidelines promulgated under *40 CFR 410.70-410.77 Subpart G- Stock and Yarn Finishing Subcategory*. The guidelines specify the maximum and average concentration for BOD<sub>5</sub>, COD, total suspended solids (TSS), sulfide, phenol and total chromium which may be discharged based upon pollutant load per 1,000 pounds of product. Mass-based ELGs are expressed as an allowable mass of pollutant discharge per unit of production and are directly related to a particular mill's production. The effluent guideline limits evaluation is based upon 90,000 lbs/day of product which is the approximate maximum production level from 2001-2009. See Table 2, below, for the applicable ELGs from Sections 410.72 (BPT) and 410.73 (BAT). Additionally, the ELGs require a pH limitation of 6.0-9.0 standard units.

**Table 2. Effluent Limitation Guidelines (ELGs) applicable to Barnhardt Manufacturing - Maximum for Any 1 Day/Average of Daily Values for 30 Consecutive Days**

BOD <sub>5</sub> (lbs/1,000 lbs product)		COD (lbs/1,000 lbs product)		TSS (lbs/1,000 lbs product)		Sulfide (lbs/1,000 lbs product)		Phenol (lbs/1,000 lbs product)		Total Chromium (lbs/1,000 lbs product)	
MAX DAILY	MON AVG	MAX DAILY	MON AVG	MAX DAILY	MON AVG	MAX DAILY	MON AVG	MAX DAILY	MON AVG	MAX DAILY	MON AVG
6.8	3.4	84.6	42.3	17.4	8.7	0.24	0.12	0.12	0.06	0.12	0.06

The production values cited for each of the ELG subpart categories were utilized to calculate the permissible mass-based limits in the draft permit for conventional pollutants which include BOD<sub>5</sub>, TSS, COD, Sulfide, Phenol and Total Chromium. An example calculation is shown below. The calculated limits are summarized in Table 3, below.

$$\begin{array}{lclclcl}
 \text{ELG} & * & \text{Production Rate} & = & \text{Calculated ELG limit} \\
 (\text{lbs}/1,000 \text{ lbs product}) & * & (90,000 \text{ lbs product}/\text{day}) & = & (\text{lbs}/\text{day})
 \end{array}$$

**Table 3. Summary of Calculated ELG Limits at Barnhardt Manufacturing - Maximum Daily/Monthly Average based on production of 90,000 lbs/day**

BOD <sub>5</sub> (lbs/day)		COD (lbs/day)		TSS (lbs/day)		Sulfide (lbs/day)		Phenol (lbs/day)		Total Chromium (lbs/day)	
MAX DAILY	MON AVG	MAX DAILY	MON AVG	MAX DAILY	MON AVG	MAX DAILY	MON AVG	MAX DAILY	MON AVG	MAX DAILY	MON AVG
612	306	7614	3807	1566	783	21.6	10.8	10.8	5.4	10.8	5.4

**C. Water Quality-Based Requirements**

Water quality-based criteria 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 (See Section 301(b) (1)(C) of the CWA). Water quality-based criteria consist of three (3) parts: 1) beneficial designated uses for a water body or a segment of a water body; 2) numeric and/or narrative water quality criteria sufficient to protect the assigned designated use(s) of the water body; and 3) anti-degradation requirements to ensure that once a use is attained it will not be degraded. The Massachusetts State Surface Water Quality Standards, found at 314 CMR 4.00, include these elements. The State Surface Water Quality Regulations limit or prohibit discharges of pollutants to surface waters and thereby assure that the surface water quality standards of the receiving water are protected, maintained, and/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, be

used unless site-specific criteria are established. EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 CFR §122.44(d).

Section 101(a)(3) of the CWA specifically prohibits the discharge of toxic pollutants in toxic amounts. The Commonwealth of Massachusetts (State) has a similar narrative criterion in their water quality regulations that prohibits such discharges (See Massachusetts Title 314 CMR 4.05(5)(e)). The effluent limits established in the Draft Permit assure that the surface water quality standards of the receiving water are protected, maintained, and/or attained.

Section 303(d) of the Federal Clean Water Act (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 total maximum daily loads (TMDL). As noted above, the *Final Massachusetts Year 2008 Integrated List of Waters* indicates that the North River is attaining water quality, no elements are listed as in “non-attainment,” and it is not listed in Category 5 which would require a TMDL.

#### **D. Anti-Backsliding**

EPA’s anti-backsliding provision as identified in Section 402(o) of the Clean Water Act and at 40 CFR §122.44(l) prohibits the relaxation of permit limits, standards, and conditions unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued. Anti-backsliding provisions apply to effluent limits based on technology, water quality, BPJ and State Certification requirements. Relief from anti-backsliding provisions can only be granted under one of the defined exceptions (See 40 CFR §122.44(l)(i)). Since none of these exceptions apply to this facility, the effluent limits in the Draft Permit must be as stringent as those in the Current Permit.

#### **E. Anti-Degradation**

The Massachusetts Anti-Degradation Policy is found at Title 314 CMR 4.04. All existing uses of the North River must be protected. As noted above, the North River is classified as a Class B water, cold water fishery, by the Commonwealth of Massachusetts (314 CMR 4.06). These waters are designated as habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. Where designated they shall be suitable as a source of public water supply with appropriate treatment. They 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.

#### **F. Effluent Limitations**

These effluent monitoring requirements have been established to yield data representative of the discharge under the authority of Section 308(a) of the CWA in accordance with 40 CFR §122.41(j), §122.44(i) and §122.48.

The following explains the reason for the particular limits (as outlined in Table 4, below) in the

permit and it reflects any changes in the permit application, applicable industrial category and also takes into account the results of past effluent monitoring (during the time period from June 2001 through September 2009, see Attachment B) and any industrial process changes.

The draft permit contains effluent limitations and conditions based upon a variety of the effluent considerations discussed above. To aid in comparing the origins of the draft conditions, Table 4, below, compares the effluent limit guidelines (ELGs), water quality based limits, limits included from the current permit due to anti-backsliding and any new conditions based upon regulation changes or other appropriate reasons.

The Massachusetts Division of Water Pollution Control originally evaluated the necessary waste load allocation (WLA) for the Kendall Fibers Mills in Colrain, MA (before it was transferred to BBA Nonwovens) which is now owned by Barnhardt Manufacturing. The evaluation was conducted in the 1970's and the results published in the report, *The Deerfield River Basin Water Quality Management Plan 1975* (MDWPC-MWRC). The WLA provided the basis for effluent limitations which formally established performance criteria for the wastewater treatment plant which is the focus of this NPDES permit renewal. The limits focused upon BOD<sub>5</sub> and TSS and did not address many of the effluent guideline parameters.

**Table 4. Barnhardt Manufacturing Company-Effluent Limitations Comparison**

Parameter	1975 Limits (Performance Criteria) * 1	Effluent Guidelines *2,5	2001 Final Permit * 3,5	2010 Draft Permit * 4,5
BOD <sub>5</sub>	300 lbs/day	306/612 lbs/day	323/510 lbs/day	300/510 lbs/day
COD	not required	3807/7614 lbs/day	3900/7800 lbs/day	3807/7614 lbs/day
TSS	250 lbs/day	783/1566 lbs/day	350/510 lbs/day	250/510 lbs/day
Sulfide	not required	10.8/21.6 lbs/day	1.0/2.0 lbs/day	1.0/2.0 lbs/day
Ammonia-N (as N)	not required	not required	---/63 lbs/day	---/63 lbs/day
TKN	not required	not required	Report	---/Report
Nitrite-Nitrate-N	not required	not required	Report	---/Report
Phenol	not required	5.4/10.8 lbs/day	---/1.0 lbs/day * 6	Report/1.0 lbs/day
Total Chromium	not required	5.4/10.8 lbs/day	---/1.1 lbs/day	Report/1.1 lbs/day
Fecal coliform/ E. coli	400 fecal coliform#/100 ml	not required	200/400 cfu/100 ml * 7	126/409 cfu/100 ml * 8
C-NOEC	not required	not required	dilution based * 9	5% * 9
LC50	not required	not required	100% * 9	100% * 9
Total Phosphorus	not required	not required	not required	---/Report
Total Copper	not required	not required	not required	---/Report

\* 1- *The Deerfield River Basin Water Quality Management Plan 1975* MWRC, p. 44, Table VII-1: Summary of Permit Effluent Limits.

\* 2- *40 CFR 400-424* October 22, 2004

\* 3- *NPDES Permit # MA0003697* effective May 25, 2001

\* 4- *NPDES Permit # MA0003697* draft 2010

\* 5- monthly average/maximum daily limits

\* 6- limit changed from 0.11 lbs/day to 1.0 lbs/day in 2004 permit modification

\* 7- Fecal Coliform

\* 8- E. coli (new water quality criteria for bacteria: December 29, 2006)

\* 9- *Ceriodaphnia dubia* as test species

1. Outfall 001

a. Flow

The company has significantly reduced water usage over the past decade due to several factors: the closing of the Kendall/AF&F facility in 1998, water conservation measures instituted, and reduction in product production. The design capacity of the treatment plant is at least 1.35 MGD, which is the flow limit in the current permit. Review of DMR data shows that the monthly average flow has ranged from 0.14 – 0.38 MGD, and averaged 0.27 MGD.

The current permit also specified as a footnote to the monthly average flow limit that the permittee shall report maximum and minimum daily flow rates, along with total flow for each operating day.

Due to the significant water usage reduction at the facility, and the authorization to withdraw 0.89 MGD of intake water from the North River under a Massachusetts Department of Environmental Protection (MassDEP) Water Management Act registration (#10306601), the draft permit shall require a maximum daily flow limit of 0.89 MGD. The draft permit shall also require reporting of monthly average flow. Flow shall be monitored continuously by a flow meter.

b. Production Rate

The current permit requires estimation of the production rate (total production rate of finished goods in lbs/day) on a weekly basis, and reporting of the monthly average. Review of DMR data shows that the average production rate was approximately 80,000 lbs/day. The maximum production rate was 96,259 lbs/day. The current permit does not contain a limit for production rate, however, calculation of limits based on ELGs require use of a production rate. The ELG limits in the current permit are calculated based on a production rate of 90,000 lbs/day; this approach as been carried over to the draft permit. Additionally, the draft permit shall require reporting of the monthly average production rate and the daily maximum production rate.

c. pH

The current permit requires a pH effluent limitation range of 6.5 - 9.0 SU. Massachusetts Surface Water Quality Standards (314 CMR 4.05(3)(b)3) require that Class B waters shall be in the range of 6.5 to 8.3 SU and not more than 0.5 units outside of the natural background range. There shall be no change from natural background conditions that would impair any use assigned to this Class. Review of DMR data shows that the facility has violated the current permit low range pH limit of 6.5 SU on two occasions and has not violated the high pH limit range of 9.0 SU.

The Deerfield River Watershed 2000 Water Quality Assessment indicates that there have been no effects from the facility's discharge on instream pH documented. The pH of the North River upstream from the discharge ranged between 6.5 and 7.8 SU and downstream from the discharge ranged from 6.9 to 7.4 SU.<sup>3</sup>

Therefore, the draft permit shall continue to require a pH effluent limitation range of 6.5 - 9.0 SU, which will allow for less chemical addition for pH adjustment and is not expected to adversely affect the stream biota as there is sufficient buffering capacity in the North River. The in-stream river flow will provide sufficient dilution such that the impact from the facility's discharge will have little if any measurable change in the in-stream pH conditions. The pH shall continue to be monitored daily.

d. Biochemical Oxygen Demand (BOD<sub>5</sub>)

The current permit requires BOD<sub>5</sub> limits of 323 lbs/day average monthly and 510 lbs/day maximum daily. Review of DMR data reveals that these limits have not been exceeded on any occasion. The highest BOD<sub>5</sub> recorded was 304 lbs/day. The current permit (as modified) requires monthly sampling.

The draft permit shall require an average monthly limit of 300 lbs/day, based upon the 1975 waste load allocation (WLA). This limit is slightly more stringent than the limit in the existing permit. The WLA did not address maximum daily limits. Therefore, the draft permit shall continue to require a maximum daily limit of 510 lbs/day, based on anti-backsliding requirements found in 40 CFR §122.44(l). BOD<sub>5</sub> shall continue to be monitored monthly.

e. Total Suspended Solids (TSS)

The current permit requires TSS limits of 350 lbs/day average monthly and 510 lbs/day maximum daily, both monitored weekly. Review of DMR data reveals that these limits have not been exceeded on any occasion.

The draft permit shall require an average monthly limit of 250 lbs/day, based upon the 1975 waste load allocation. This limit is more stringent than the existing 2001 permit. The WLA did not address maximum daily limits. Therefore, the draft permit shall continue to require a maximum daily limit of 510 lbs/day, based on anti-backsliding requirements found in 40 CFR §122.44(l). The monitoring frequency has been reduced to monthly.

f. Chemical Oxygen Demand (COD)

The current permit requires COD limits of 3900 lbs/day average monthly and 7800 lbs/day

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<sup>3</sup> MassDEP, Deerfield River Watershed 2000 Water Quality Assessment, October 2004.

maximum daily, based on the ELGs and a production rate of 90,000 lbs/day. Review of DMR data reveals that these limits have not been exceeded on any occasion. The highest COD level recorded was 2541 lbs/day.

The draft permit shall require an average monthly limit of 3807 lbs/day average monthly and 7614 lbs/day maximum daily, based on the ELGs at a production level of 90,000 lbs/day. The monitoring frequency shall be reduced from 1/month to 1/quarter.

g. Sulfide

The current permit requires sulfide limits of 1.0 lbs/day average monthly and 2.0 lbs/day maximum daily. The current permit (as modified) requires monthly sampling. Review of DMR data shows that these limits have not been exceeded on any occasion. Both the daily maximum and monthly average sulfide concentrations have ranged from 0.004 - 0.963 lbs/day.

The ELGs applicable to the facility require sulfide limits of 10.8 lbs/day as a monthly average and 21.6 lbs/day as a daily maximum, based on a production rate of 90,000 lbs/day. These limits are less stringent than the limits in the current permit.

Sulfide is not listed specifically in the Massachusetts Surface Water Quality Standards (314 CMR 4.00). Therefore, according to the Massachusetts Surface Water Quality Standards [314 CMR 4.05(5)(e)]:

For pollutants not otherwise listed in 314 CMR 4.00, the *National Recommended Water Quality Criteria: 2002, EPA 822R-02-047, November 2002* published by EPA pursuant to Section 304(a) of the Federal Water Pollution Control Act, are the allowable receiving water concentrations for the affected waters, unless the Department either establishes a site specific criterion or determines that naturally occurring background concentrations are higher.

EPA reviewed the National Recommended Water Quality Criteria, which do not require a sulfide limit, but do contain a 'sulfide-hydrogen sulfide' chronic (CCC) criterion of 2.0 ug/L. Review of EPA's Water Quality Criteria for Water (The Red Book, 1976), shows that the 'sulfide-hydrogen sulfide' limit refers to undissociated hydrogen sulfide. When hydrogen sulfide dissolves in water, it dissociates into hydrosulfide ( $\text{HS}^-$ ) and sulfide ion ( $\text{S}^{2-}$ ); the ratio of the concentrations of these various ions depending on the pH of the solution. At lower pH values, the majority of sulfide is expected to be in the form of undissociated hydrogen sulfide.<sup>4</sup> Therefore, since the pH of the discharge from this facility averages about 8 SU, the concentration of hydrogen sulfide is not expected to be high.

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<sup>4</sup> Red Book (EPA 440/9-76-023, July, 1976)

Therefore, the draft permit shall continue to limit the concentration of sulfide in the discharge. The current permit limits of 1.0 lbs/day monthly average and 2.0 lbs/day daily maximum shall be retained in the draft permit. Review of DMR data shows that the previous monthly average discharges from the facility have not exceeded this mass loading on any occasion. The monthly monitoring frequency shall be reduced to quarterly in the draft permit.

h. Phenol

The current permit (as modified in 2004) requires a phenol maximum daily limit of 1.0 lb/day. Review of DMR data shows that this limit has been exceeded on one occasion, at a phenol level of 17 lbs/day.

Phenol is not listed specifically in the Massachusetts Surface Water Quality Standards (314 CMR 4.00). Therefore, according to the Massachusetts Surface Water Quality Standards [314 CMR 4.05(5)(e)]:

For pollutants not otherwise listed in 314 CMR 4.00, the *National Recommended Water Quality Criteria: 2002, EPA 822R-02-047, November 2002* published by EPA pursuant to Section 304(a) of the Federal Water Pollution Control Act, are the allowable receiving water concentrations for the affected waters, unless the Department either establishes a site specific criterion or determines that naturally occurring background concentrations are higher.

EPA reviewed the National Recommended Water Quality Criteria, which requires human health consumption criterion of 10 mg/L (water and organism) and of 86 mg/L (organism only). The Technical Support Document for Water Quality-based Toxics Control (TSD) specifies that the minimum dilution at which water quality criteria apply is the harmonic mean flow for human health consumption.<sup>5</sup> Therefore, the human health consumption dilution factor is calculated as follows:

$$\begin{aligned} \text{Harmonic Mean Flow \{river\} / effluent flow} &= \text{human health dilution factor} \\ 54.6 \text{ cfs}^6 / 1.38 \text{ cfs} &= 39.6 \end{aligned}$$

Based on the human health consumption dilution factor of 39.6 and a permitted flow of 0.89 MGD, the human health criteria convert to 2,940 lbs/day (water+organism) and 25,300 lbs/day (organism), as calculated below:

$$\begin{aligned} \text{HH(Water+Org) limit (ug/L)} &= (\text{HH(Water+Org) criteria}) * (\text{human health dilution factor}) \\ &= 10 \text{ mg/L} * 39.6 = 396 \text{ mg/L} \end{aligned}$$

<sup>5</sup> Technical Support Document for Water Quality-based Toxics Control, p. 130.

<sup>6</sup> Based on USGS calculation using the period of daily mean discharges during water years 1941 through 2008, the harmonic mean discharge is 54.6 cfs.

$$\begin{aligned} \text{HH(Water+Org) limit (lbs/day)} &= \text{Flow (MGD)} * \text{Limit (mg/L)} * \text{CF [(lb*L)/(MG*mg)]} \\ &= 0.89 \text{ MGD} * 396 \text{ mg/L} * 8.34 \text{ (lb*L)/(MG*mg)} \\ &= 2,940 \text{ lbs/day} \end{aligned}$$

$$\begin{aligned} \text{HH (Organism) limit (ug/L)} &= (\text{HH (Organism) criteria}) * (\text{human health dilution factor}) \\ &= 86 \text{ mg/L} * 39.6 = 3406 \text{ mg/L} \end{aligned}$$

$$\begin{aligned} \text{HH (Organism) limit (lbs/day)} &= \text{Flow (MGD)} * \text{Limit (mg/L)} * \text{CF [(lb*L)/(MG*mg)]} \\ &= 0.89 \text{ MGD} * 3406 \text{ mg/L} * 8.34 \text{ (lb*L)/(MG*mg)} \\ &= 25,300 \text{ lbs/day} \end{aligned}$$

The limits based on the applicable ELGs, calculated based on a production of 90,000 lbs of product, are 5.4 lbs/day monthly average and 10.8 lbs/day daily maximum.

Therefore, the draft permit maximum daily limit of 1.0 lb/day remains the same as the current permit limit (as modified) due to anti-backsliding provisions. Monitoring frequency has been reduced from monthly to quarterly. The ELG average monthly limit of 5.4 lbs/day has not been included in the draft permit, since compliance with the more stringent maximum daily limit will ensure compliance with this monthly average limit.

i. Total Chromium

Chromium is not listed specifically in the Massachusetts Surface Water Quality Standards (314 CMR 4.00). Therefore, according to the Massachusetts Surface Water Quality Standards [314 CMR 4.05(5)(e)]:

For pollutants not otherwise listed in 314 CMR 4.00, the *National Recommended Water Quality Criteria: 2002, EPA 822R-02-047, November 2002* published by EPA pursuant to Section 304(a) of the Federal Water Pollution Control Act, are the allowable receiving water concentrations for the affected waters, unless the Department either establishes a site specific criterion or determines that naturally occurring background concentrations are higher.

EPA reviewed the National Recommended Water Quality Criteria, which contain criteria for chromium (III) and chromium (VI) based on dissolved metal concentrations. The criteria for Chromium (III) are hardness dependent (a hardness of 28 mg/L was used based on the average hardness of receiving water samples reported in WET test results<sup>7</sup>). Converted to total recoverable chromium, the chronic (CCC) criteria is 41.8 ug/L and the acute (CMC) criterion is 652 ug/L.

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<sup>7</sup> Status Report on Toxicity Investigations, BBA Fiberweb, February 2006 – Appendix D: New England Bioassay Toxicity Study Reports.

$$\begin{aligned}
 \text{Chronic limit (ug/L)} &= (\text{chronic criteria}) * (\text{chronic dilution factor}) \\
 &= 41.8 \text{ ug/L} * 20.2 = 844 \text{ ug/L} \\
 \text{Chronic limit (lbs/day)} &= \text{Flow (MGD)} * \text{Chronic limit (mg/L)} * \text{CF} [(\text{lb*L})/(\text{MG*mg})] \\
 &= 0.27 \text{ MGD} * 0.844 \text{ mg/L} * 8.34 (\text{lb*L})/(\text{MG*mg}) \\
 &= 1.9 \text{ lbs/day} \\
 \\ 
 \text{Acute limit (ug/L)} &= (\text{acute criteria}) * (\text{acute dilution factor}) \\
 &= 652 \text{ ug/L} * 4.90 = 3195 \text{ ug/L} \\
 \text{Acute limit (lbs/day)} &= \text{Flow (MGD)} * \text{Acute limit (mg/L)} * \text{CF} [(\text{lb*L})/(\text{MG*mg})] \\
 &= 0.89 \text{ MGD} * 3.195 \text{ mg/L} * 8.34 (\text{lb*L})/(\text{MG*mg}) \\
 &= 24 \text{ lbs/day}
 \end{aligned}$$

The current permit limit of 1.1 lbs/day maximum daily is based upon the 2001 permit and is more stringent than the effluent limitation guideline of 10.8 lbs/day daily maximum, as well as the 24 lbs/day based on Water Quality Criteria. Therefore, the maximum daily limit of 1.1 lbs/day has been retained based on anti-backsliding provisions. Review of DMR data shows that this limit has not been exceeded on any occasion, with a maximum chromium level of 0.009 lbs/day, therefore the monitoring frequency has been reduced from monthly to quarterly.

The Water Quality based average monthly limit of 1.9 lbs/day has not been included in the draft permit, since compliance with the more stringent maximum daily limit will ensure compliance with this monthly average limit.

j. Ammonia-Nitrogen (as N)

The limit of 63 lbs/day maximum daily is based upon the 2001 permit and has been retained as such due to anti-backsliding provisions. Review of DMR data shows that this limit has not been exceeded on any occasion, with a maximum ammonia-nitrogen level of 22.7 lbs/day. Therefore, the monitoring frequency shall be reduced from 1/month to 1/quarter.

k. Total Phosphorus

In freshwater systems including rivers, streams and impoundments, phosphorus is usually the limiting nutrient for primary plant production. Phosphorus promotes the growth of nuisance algae and aquatic plants and when these plants and algae undergo their decay processes, they generate odors and lower the dissolved oxygen levels in the river.

The Deerfield River Watershed 2000 Water Quality Report states that total phosphorus measurements in the North River upstream from the facility's discharge ranged from <0.01 to 0.017 mg/L (Appendix A, Table A9). Downstream from the discharge they ranged from 0.019 to 0.038 mg/L. All of the measurements taken were below 0.05 mg/L.

Review of the permit re-application shows that phosphorus was detected in the discharge at 4.3 mg/L. Therefore, the draft permit includes a reporting requirement for total phosphorus due to the lack of phosphorus data for the wastewater treatment plant effluent and the pending implementation of specific total phosphorus criteria for Massachusetts waters. If data indicate a reasonable potential to violate water quality standards, then the permit may be re-opened to include a specific total phosphorus limit.

l. Total Copper

The draft permit includes a reporting requirement for total copper due to the sensitivity of the receiving water, elevated levels of copper in past effluent data, the effluent toxicity history and the pending implementation of specific higher total copper criteria. The whole effluent toxicity information discussed below does not indicate that copper is a cause of toxicity. The total copper levels in the effluent for 2007-2008 averaged 35 ug/l (n = 8)<sup>8</sup> while the total copper levels in the North River upstream of the discharge were near or below detection level (1 ug/l) (n = 7)<sup>8</sup> with one outlier at 19 ug/l. Thus, the ambient levels of total copper in the North River are negligible. The available dilution at 7Q10 flows under current discharge levels is 20.2:1 thus the increase in loading to the river from the effluent is minimal. However, if future data indicate a reasonable potential to violate water quality standards then the permit may be re-opened to include a specific total copper limit. Maximum daily copper concentration shall be monitored monthly in the draft permit.

m. E. coli

The current permit contains limits for fecal coliform of 200 cfu/100ml average monthly and 400 cfu/100ml maximum daily. Review of DMR reveals that these limits have not been exceeded on any occasion.

The draft permit shall require limits for E. coli, as outlined in the recently updated water quality criteria for bacteria in Massachusetts. The change was made to the Massachusetts Surface Water quality standards in 2006 and approved by USEPA in 2007.

Therefore, the draft permit shall require a geometric mean monthly limit of 126 cfu/100ml and a maximum daily limit of 409 cfu/100ml, based upon the recent updated water quality criteria for bacteria in Massachusetts and "light use" in the North River. The monitoring frequency shall be reduced from 1/week to 1/month. These limits have been changed to seasonal limits from April 1 to October 31, at the discretion of MassDEP.

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<sup>8</sup> "n" is equal to the total number of samples in the reference data set.

n. Total Kjeldahl Nitrogen (TKN), Nitrite-Nitrate (as N)

Total Kjeldahl Nitrogen (TKN), a component of total nitrogen, is the sum of organic nitrogen and ammonia-N. Total nitrogen is the sum of TKN and nitrite-nitrate (as N). The current permit requires sampling of nitrogen to help determine the total loading from point sources in Massachusetts, which flow to Connecticut and eventually Long Island Sound. This information was requested in a comment on the current permit (as drafted) by the Connecticut DEP, to assist in implementation of the Long Island Sound TMDL for nitrogen.

In December 2000, the Connecticut Department of Environmental Protection (CT DEP) completed the 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.

In order to ensure that the aggregate nitrogen loading from out-of-basin point sources does not exceed the TMDL target of 25 percent reduction over baseline loadings, EPA intends to include a permit condition for all existing treatment facilities in Massachusetts and New Hampshire that discharge to the Connecticut, Housatonic, and Thames River watersheds, requiring the permittees to evaluate alternative methods of operating their treatment plans to optimize the removal of nitrogen, and to describe previous and ongoing optimization efforts. Facilities not currently engaged in optimization efforts will also be required to implement optimization measures sufficient to ensure that their nitrogen loads do not increase, and that the aggregate 25% reduction is maintained.

Such a requirement has been included in this permit. Specifically, the permit requires an evaluation of alternative methods of operating the existing wastewater treatment facility in order to control total nitrogen levels, and implementation of optimization methods sufficient to ensure that there is no increase in total nitrogen compared to the existing average daily load. The annual average total nitrogen load from this facility (for the period of June 2001 – September 2009) is estimated to be 66 lbs/day. 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.

Review of DMR data shows that the highest TKN monthly average has been 74 mg/L, with an average of 13.3 mg/L, and that the highest nitrite-nitrate (as N) monthly average has been 66.2 mg/L, with an average of 15.3 mg/L. The permit shall continue to require monitoring of both TKN and nitrite-nitrate (as N), on a monthly basis. The permit shall also require development and implementation of site specific BMPs in order to reduce and/or eliminate the source(s) of nitrogen at the facility.

## o. Temperature

State Water Quality Criteria for temperature require that Class B waters shall not exceed 68°F (20°C) based on the mean of the daily maximum temperature over a seven day period in cold water fisheries, unless naturally occurring. The rise in temperature due to a discharge shall not exceed 3°F (1.7°C) in rivers and streams designated as cold water fisheries.

The current permit does not require monitoring for temperature; however, since the discharge includes cooling water, the draft permit shall require monitoring of the effluent temperature, to ensure State Water Quality Criteria are met. Part I.A.7 of the draft permit shall also require that the rise in temperature due to the discharge shall not exceed 3°F.

## p. Whole Effluent Toxicity (WET)

Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The Massachusetts Surface Water Quality Standards include the following narrative statement and requires that EPA criteria established pursuant to Section 304(a)(1) of the CWA be used as guidance for interpretation of the following narrative criteria: All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife.

The Region typically includes toxicity testing requirements where a combination of toxic constituents may be toxic to humans, aquatic life, or wildlife. Section 101(a)(3) of the CWA specifically prohibits the discharge of toxic pollutants in toxic amounts.

Due to the potential for toxicity resulting from the combination of pollutants in the facility's discharge, in accordance with EPA national and regional policy, and in accordance with MassDEP policy, the previous permit included acute and chronic toxicity monitoring requirements. (See Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants, 50 Fed. Reg. 30,784 (July 24, 1985); EPA's Technical Support Document for Water Quality-Based Toxics Control" on September, 1991; and MassDEP's Implementation Policy for the Control of Toxic Pollutants in Surface Waters (February 23, 1990).

Whole effluent toxicity testing is conducted to assess whether certain effluents, often containing potentially toxic pollutants, are discharged in a combination which produces a toxic amount of pollutants in a receiving water. Therefore, toxicity testing is being used in conjunction with pollutant specific control procedures to control the discharge of toxic pollutants.

There are two specific sources of legal authority which explain how regulatory authorities have the legal basis for establishing toxicity testing requirements and toxicity-based permit limits in NPDES permits. Sections 402(a)(2) and 308(a) of the Clean Water Act provide EPA and States with the authority to require toxicity testing data. Section 308 specifically describes biological monitoring methods as techniques which may be used to carry out objectives of the Act. Under

certain State narrative 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) states, "When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in stream 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 non-point 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.

The effluent from the facility has consistently demonstrated acute toxicity to the *Ceriodaphnia dubia* (*C. dubia*) species and variable chronic toxicity (see Attachment B). BBA Nonwovens (now Barnhardt Manufacturing) undertook an evaluation of the probable causes of the toxicity and presented the results in the report *Status Report on Toxicity Investigations February 2006 BBA Fiberweb* (RMT Consulting Engineers, P.C.). The investigation had several phases: literature review; input from toxicity experts from USEPA, MassDEP, Massachusetts Office of Technical Assistance, and private industry; EDTA chelating tests (removes metals prior to conducting toxicity tests); toxicity tests using only cotton and hot water (to determine toxicity content of the cotton); and use of a mock effluent (various doses of dissolved ions).

The effluent was shown to not be acutely toxic to *Daphnia magna* (*D. magna*), another test species used for toxicity tests. It has been shown that *D. magna* routinely exhibits less sensitivity to Total Dissolved Solids (TDS) than *C. dubia*.<sup>9</sup> These species generally show similar sensitivities to most toxicants;<sup>10</sup> therefore, the difference in sensitivity to TDS can be useful in characterizing TDS toxicity. As stated in a report from MassDEP Office of Technical Assistance for Toxics Use Reduction, dated January 10, 2006, the sources of toxicity in the discharge are the high TDS and alkalinity.

The major contributors to TDS are the sodium hydroxide in the wastewater and the sulfuric acid used to neutralize the discharge. The latter will generate sulfate ions which are known to be toxic. The high alkalinity in the discharge is likely due to the use of flue gas for pH adjustment since carbon dioxide in the flue gas can lead to the formation of bicarbonate and carbonate ions in the effluent. At a pH of 8.6 SU, the total alkalinity of the combined industrial and domestic discharge is due to a combination of carbonate, bicarbonate, and hydroxide ions.

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9 American Petroleum Institute (API). API. 1998. *The Toxicity of Common Ions to Freshwater and Marine Organisms*. Washington, DC, November 1998, Doc. No. 0300-029.

10 Mount, D.R., and D.D. Gulley. 1992. *Development of a Salinity/Toxicity Relationship to Predict Acute Toxicity of Saline Waters to Freshwater Organisms*. Gas Research Institute, Environment and Safety Research Department, Chicago, IL, October, 1992.

The MassDEP Technical Assistance report concluded that elimination or reduction of the use of sodium hydroxide will significantly lower the probability of having high TDS and toxic ions in the discharge. The facility uses about 200 lbs of sodium hydroxide to scour goods and 20 lbs for bleaching. The residual sodium hydroxide in the spent scour solution could be as high as 3% and less than 1% in the bleaching solution.

The report suggested the facility investigate the possibility of replacing chemical scouring using sodium hydroxide with enzymatic scouring. It is expected that enzymatic scouring would eliminate the need for harsh alkaline chemicals (by replacement with biological organisms), provide up to 12% cleaner cotton than traditional harsh alkaline processes, reduce energy use by up to 20%, and save process time. Alternatively, the report suggested the facility explore the use of micro/ultrafiltration using membranes to recover sodium hydroxide from the spent solutions. The recovered alkaline solution could then be refortified for its primary process use, or reused in the first cleaning operation at the cake preparation stage. Therefore, the draft permit shall require development and implementation of BMPs including, at a minimum, investigation of alternate treatments such as enzymatic scouring and micro/ultrafiltration at reducing effluent toxicity.

The draft permit shall continue to require quarterly acute toxicity testing, with an LC50 of  $\geq 100\%$ . Acute WET limits are established to ensure that there is no acute toxicity at the edge of the acute mixing zone. Specific acute mixing zones are not defined in the Massachusetts Water Quality Standards, but acute mixing zones are defined as an area “immediately surrounding the discharge outfall, sized to prevent lethality to passing organisms” (see EPA Whole Effluent Toxicity Policy (WET) Control Policy).

The limit in the current permit was established using the Massachusetts Implementation Policy for Control of Toxic Pollutants in Surface Waters, which establishes LC50 limitations based on ranges of dilution. The Massachusetts policy recommends an acute water quality criterion of 0.3 toxic units (TU) in the receiving water. (A toxic unit is 100/LC50). This criterion is based on an adjustment factor of one-third, used to extrapolate the LC50 to an LC1 (concentration at which 1% of the test organisms die). Therefore, the policy establishes the acute mixing zone as the area surrounding the outfall where the acute toxicity due to the discharge is greater than 0.3 TU.

In order to ensure that this criteria is met within a short discharge of the effluent pipe, the Massachusetts policy establishes an end-of-pipe limit of 1.0 TU for dilutions less than or equal to 100 and 2.0 TU for dilution factors greater than 100. The acute dilution factor for the discharge based on daily maximum flow (0.89 MGD, or 1.38 cfs) and 1Q10 (6.76 cfs) is 4.90. Therefore, a limit of 1.0 TU, which is an LC50 of 100% shall continue to be required in the draft permit.

The previous dilution factor for chronic whole effluent toxicity varied as a sliding scale limit, based upon the effluent flow at the facility and the resultant dilution available, as established in the current permit. However, review of DMR data shows that the effluent flow has not varied considerably during the time period from June 2001 – September 2009, with flows ranging from 0.139 – 0.38 MGD. Therefore, the draft permit shall require the chronic dilution factor of 20.2,

as calculated above, in determining the applicable chronic whole effluent toxicity limit. The permit limits for chronic toxicity are set at a level to translate into no chronic toxicity in-stream due to the dilution available. Therefore, the draft permit shall require the effluent meet a C-NOEC limit of 5%, monitored quarterly. The calculation is based upon a simple mixing equation as follows:

$$\text{C-NOEC limit} = \text{reciprocal of dilution factor as a \%} = 1/20.2 = 5\%$$

USEPA conducted a dye dispersion study of the North River in 2009 to verify the actual mixing characteristics in the vicinity of the outfall. Past field observations have visually shown very rapid and complete mixing within a short distance from the outfall. The dye dispersion study confirms this assumption of rapid mixing, although it should be noted that the mixing in the canal that hugs the bank of the river adjacent to the facility was not as rapid as the mixing in the main stretch of the river.

## 2. Special Conditions and Requirements

The draft permit shall require development of Best Management Practices (BMPs) to be followed in operating the facility, cleaning tanks and other equipment and disposing of any liquid and solid waste. The purpose of the plan is to identify and to describe the practices which minimize the amounts of pollutants (biological and chemical) discharged to surface waters.

Specifically, the permittee shall develop and implement site specific BMPs in order to reduce and/or eliminate the acute toxicity of the effluent. These BMPs shall include, at a minimum, investigation of alternative treatments such as enzymatic scouring and use of micro/ultrafiltration using membranes to recover sodium hydroxide for reuse.

The permittee shall also develop and implement site specific BMPs in order to reduce and/or eliminate the source(s) of nitrogen at the facility.

Additionally, the draft permit shall require an evaluation of alternative methods of operating the existing wastewater treatment facility to optimize the removal of nitrogen. Specifically, the permittee shall implement the recommended operational changes in order to maintain the existing mass discharge loading of total nitrogen. The annual average total nitrogen load from this facility (for the period of June 2001 – September 2009) is estimated to be 66 lbs/day. The permittee shall also submit an annual report to EPA and MassDEP 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.

## **VII. ENDANGERED SPECIES ACT**

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA) 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 administer Section 7 consultations for bird, terrestrial, and freshwater aquatic species.

EPA has reviewed the federal endangered or threatened species of fish and wildlife to see if any such listed species might potentially be impacted by the re-issuance of this NPDES permit. Based on the low levels of concern, permit conditions, and distribution of listed species in the vicinity of the facility’s discharge, EPA has determined that there will be no effects on these species. EPA is coordinating a review of this finding with NMFS and USFWS through the Draft Permit and Fact Sheet.

### **VIII. ESSENTIAL FISH HABITAT**

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 NMFS if EPA’s action or proposed actions that it funds, permits, or undertakes, “may adversely impact any essential fish habitat” (EFH). The Amendments define EFH as “waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity,” (16 U.S.C. § 1802(10)). “Adverse 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. Id.

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.

A review of available EFH information indicates that North River is not designated EFH for any federally managed species. Therefore, consultation with NMFS is not required. If adverse effects are detected as a result of this permit action, NMFS will be notified and an EFH consultation will promptly be initiated. During the public comment period, EPA has provided a copy of the Draft Permit and Fact Sheet to NMFS.

### **IX. STATE CERTIFICATION REQUIREMENTS**

EPA may not issue a permit unless the MassDEP certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Surface Water Quality Standards or unless state certification is waived. The staff of the MassDEP 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 that the draft permit will be certified.

#### **X. ADMINISTRATIVE RECORD, PUBLIC COMMENT PERIOD, HEARING REQUESTS, AND PROCEDURES FOR 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 the U.S. EPA, Office of Ecosystem Protection Attn: Nicole Kowalski, 5 Post Office Square - Suite 100 (OEP06-4), Boston, Massachusetts 02109-3912 or via email to [kowalski.nicole@epa.gov](mailto:kowalski.nicole@epa.gov). The comments should reference the name and permit number of the facility for which they are being provided.

Any person, prior to such date, may submit a request in writing to EPA and the States Agency for a public hearing to consider the draft permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator 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 a public hearing, if such hearing is held, the Regional Administrator 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 thirty (30) days following the notice of final permit decision, permits may be appealed to the Environmental Appeals Board in the manner described at 40 CFR § 124.19.

#### **XI. EPA & 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:

Nicole Kowalski, EPA New England – Region 1  
5 Post Office Square - Suite 100 (OEP06-4)  
Boston, MA 02109-3912  
Telephone: (617) 918-1746 FAX: (617) 918-0746  
email: [kowalski.nicole@epa.gov](mailto:kowalski.nicole@epa.gov)

Kathleen Keohane, Massachusetts Department of Environmental Protection  
Division of Watershed Management, Surface Water Discharge Permit Program  
627 Main Street, 2<sup>nd</sup> Floor  
Worcester, Massachusetts 01608  
Telephone: (508) 767-2856 FAX: (508) 791-4131  
email: [kathleen.keohane@state.ma.us](mailto:kathleen.keohane@state.ma.us)

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Date

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

## **XII. ATTACHMENTS**

- A. Site Location GIS Map**
- B. DMR Data Summary**

## **Response to Comments on Draft National Pollutant Discharge Elimination System (NPDES) Permit No. MA0003697- Barnhardt Manufacturing Company**

### **Introduction:**

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 (MA0003697). The responses to comments explain and support the EPA determinations that form the basis of the Final Permit. The Barnhardt Manufacturing Company Draft Permit public comment period began April 16, 2010 and ended May 15, 2010. Comments on the draft permit were received from Cushing, Jammallo & Wheeler, Inc. (CJW), on behalf of Barnhardt Manufacturing Company (Barnhardt), the Connecticut River Watershed Council (CRWC), and the Connecticut Department of Environmental Protection (CTDEP).

The Final Permit is almost identical to the Draft Permit that was available for public comment. Although EPA's knowledge of the facility has benefited from the various 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 changes and clarifications in response to comments. These changes are listed below.

### **Changes to Permit:**

1. In the table at Part I.A.1, the monitoring frequency for E. coli has been changed from 1/month to 1/week.
2. In the table at Part I.A.1, the daily maximum effluent limitation for ammonia (as N) has been reduced to 42 lbs/day.
3. Footnote 5 in Part I.A.1 has been revised to state, "Samples shall be collected during the months of January, April, July, and October..."
4. Footnote 11 in Part I.A.1 has been added to state, "Total production rate of finished goods in lbs/day."
5. Footnote 12 in Part I.A.1 has been added to state:  
The permittee may submit a written request to the EPA requesting a reduction in the frequency (to not less than once per month) of required testing for E. coli, after completion of an entire season (April 1<sup>st</sup> – October 31<sup>st</sup>) of weekly successive monitoring results of effluent, all of which must demonstrate levels of E. coli below the permit effluent limitations. Until written notice is received by certified mail from the EPA indicating that the E. coli testing requirement has been changed, the permittee is required to continue testing at the frequency specified in the permit.
6. Footnote 13 in Part I.A.1 has been added to state:  
The permittee may submit a written request to the EPA requesting a reduction in the frequency (to not less than once per year) of required testing for chromium, after completion of a minimum of eight (8) successive monitoring results of effluent, taken over a period of two (2) years, all of which must demonstrate levels of chromium below the 1.1

lbs/day daily maximum limit. Until written notice is received by certified mail from the EPA indicating that the chromium testing requirement has been changed, the permittee is required to continue testing at the frequency specified in the permit.

7. Part I.C.1 of the final permit states, "A plan shall be developed which establishes Best Management Practices (BMPs) to be followed in operating the facility, cleaning of any equipment, and disposing of any liquid and solid waste."

**Comments from CJW, on behalf of Barnhardt:**

**Comment 1:**

*Reduction in Permitted Flow Volume*

The 2001 NPDES permit included a limitation on effluent flow of 1.35 million gallons per day (MGD). The draft permit includes a limitation on effluent flow of 0.89 MGD. Barnhardt acknowledges that effluent flow from current operations has been significantly less than the 0.89 MGD contained in the draft permit. However, if the Barnhardt facility were to increase its operating level at the facility, the potential increase in waste water generated may approach or exceed the draft permit amount. Barnhardt requests that the flow limitation be returned to the 1.35 MGD contained in the 2001 permit.

**Response to Comment 1:**

The reduced flow limit in the draft permit is based on significant reduced water usage at the facility over the past decade due to several factors: the closing of the Kendall/AF&F facility in 1998, water conservation measures instituted, and reduction in product production. Review of DMR data shows that the monthly average flow has ranged from 0.14 – 0.38 MGD, and averaged 0.27 MGD.

Due to the significant water usage reduction at the facility, and the authorization to withdraw 0.89 MGD of intake water from the North River under a Massachusetts Department of Environmental Protection (MassDEP) Water Management Act registration (#10306601), the draft permit requires a maximum daily flow limit of 0.89 MGD. This flow limit shall continue to be required in the final permit.

The conditions in the permit are based on the facility operations at the time of permit re-issuance. Upon any change in operating conditions, Barnhardt may submit a request to EPA for a permit modification to adjust the flow limit.

**Comment 2:**

The 2001 NPDES permit included an average monthly limit for BOD<sub>5</sub> of 323 pounds per day. The draft permit includes an average monthly limit of 300 pounds per day. Barnhardt has had one test in excess of the new 300 pounds per day limit. Barnhardt views this new limit as a reduction that could lead to an exceedence of a permit limitation. Since Barnhardt has not modified any of its treatment works that would lead to enhanced performance for BOD<sub>5</sub>, we do not believe that there is any justification for

changing the limitation. Barnhardt requests that the limitation be returned to the 350 pounds per day contained in the 2001 permit.

**Response to Comment 2:**

The Massachusetts Division of Water Pollution Control originally evaluated the necessary waste load allocation (WLA) for the Kendall Fibers Mills in Colrain, MA (before it was transferred to BBA Nonwovens) which is now owned by Barnhardt Manufacturing. The evaluation was conducted in the 1970's and the results published in the report, *The Deerfield River Basin Water Quality Management Plan 1975* (MDWPC-MWRC). The WLA provided the basis for effluent limitations (for BOD<sub>5</sub> and TSS) which formally established performance criteria for the wastewater treatment plant at Barnhardt. Therefore, based on the 1975 waste load allocation (WLA), the draft permit requires an average monthly BOD<sub>5</sub> limit of 300 lbs/day. This limit shall continue to be required in the final permit.

**Comment 3:**

The 2001 NPDES permit included an average monthly limit for TSS of 350 pounds per day. The draft permit includes an average monthly limit of 250 pounds per day. Barnhardt views this new limit as a reduction that could lead to an exceedence of a permit limitation. Since Barnhardt has not modified any of its treatment works that would lead to enhanced performance for TSS, we do not believe that there is any justification for changing the limitation. Barnhardt requests that the limitation be returned to the 350 pounds per day contained in the 2001 permit.

**Response to Comment 3:**

The Massachusetts Division of Water Pollution Control originally evaluated the necessary waste load allocation (WLA) for the Kendall Fibers Mills in Colrain, MA (before it was transferred to BBA Nonwovens) which is now owned by Barnhardt Manufacturing. The evaluation was conducted in the 1970's and the results published in the report, *The Deerfield River Basin Water Quality Management Plan 1975* (MDWPC-MWRC). The WLA provided the basis for effluent limitations (for BOD<sub>5</sub> and TSS) which formally established performance criteria for the wastewater treatment plant at Barnhardt. Therefore, based on the 1975 waste load allocation (WLA), the draft permit requires an average monthly TSS limit of 250 lbs/day. This limit shall continue to be required in the final permit.

Review of DMR data shows that the highest monthly average mass of TSS discharged through Outfall 001 was 186 lbs/day. Therefore, based on current operating conditions, the discharge is not expected to violate the monthly average limit of 250 lbs/day.

**Comment 4:**

In the past, Barnhardt conducted extensive testing for Total Chromium concentrations in the facility effluent. This testing requirement was suspended by USEPA approximately

four years ago. Barnhardt believes that the level of testing is sufficient to demonstrate that the presence of chromium in the facility effluent does not have an impact on the receiving waters. Barnhardt requests that the requirement for testing total chromium be dropped from the final NPDES permit.

**Response to Comment 4:**

The current permit chromium limit of 1.1 lbs/day maximum daily has been retained in the draft permit based on anti-backsliding requirements found in 40 CFR §122.44(l). Since review of DMR data shows that this limit has not been exceeded on any occasion, with a maximum chromium level of 0.009 lbs/day, the monitoring frequency has been reduced from monthly to quarterly. EPA believes that quarterly monitoring of chromium is not over-burdensome; however, the following condition has been added to the permit as Footnote 13 to the Table at Part I.A.1:

The permittee may submit a written request to the EPA requesting a reduction in the frequency (to not less than once per year) of required testing for chromium, after completion of a minimum of eight (8) successive monitoring results of effluent, taken over a period of two (2) years, all of which must demonstrate levels of chromium below the 1.1 lbs/day daily maximum limit. Until written notice is received by certified mail from the EPA indicating that the chromium testing requirement has been changed, the permittee is required to continue testing at the frequency specified in the permit.

**Comment 5:**

The draft permit contains a discharge limitation for Whole Effluent Toxicity (WET) that includes an acute LC50 of 100%.

*Summary of Previously Proposed Limits*

Barnhardt's position relative to the limitation for Whole Effluent Toxicity was outlined in a series of letters from BBA Fiberweb to the MA DEP in March 2005 and to USEPA in November of 2005. CJW has reproduced salient parts of the 2005 texts and requests that USEPA and MA DEP consider the alternative approach presented in the letters. Excerpts from the letters are presented below.

Taken from a letter from BBA Fiberweb (predecessor to Barnhardt Manufacturing Company) to Mr. David Pincumbe, USEPA dated November 30, 2005.

"BBA believes that total dissolved solids (TDS) in this effluent are the most significant contributor to the toxicity issue. The TDS levels in the effluent have varied between approximately 1,800 and 3,800 mg/L. BBA has already taken proactive, constructive steps to mitigate acute toxicity that might be related to effluent TDS by modifying the effluent neutralization process. The primary source of TDS is from sodium hydroxide used to elevate the pH during the cotton bleaching process. Previously, the elevated pH bleaching effluent was neutralized with sulfuric acid prior to treatment in the activated sludge process. To minimize the impact of TDS, BBA modified the neutralization process to take advantage of

carbon dioxide from the boiler flue gas as a replacement for most of the sulfuric acid demand. Sulfuric acid use has dropped by 75 percent since that change was made and the effluent TDS has decreased accordingly. However, the residual TDS remains at a level that, by itself, could result in a 50 percent mortality effect on test organisms in an acute toxicity test.

The attached Figure 1 illustrates the TDS concentrations measured in the 40 toxicity tests accomplished by BBA since June 2001. Note that only 18 of the tests were for compliance and the other 22 were accomplished at BBA's direction in efforts to investigate and understand the source of the toxicity issue. Two points should be observed in the data plotted in Figure 1. First, the general decreasing trend line of the data demonstrates that BBA has made progress in their efforts to reduce the TDS present in the discharge. The second point is that the level of TDS in these toxicity tests has averaged 3,026 mg/L.

BBA believes that this circumstance of elevated TDS in a discharge into Massachusetts fresh waters is a relatively rare situation that justifies an individualized approach to its resolution. In March, 2005, letter to Mr. Paul Hogan of the MA DEP, BBA proposed to use the CORMIX model to define an acceptable mixing zone for the discharge in the North River, in accordance with the Massachusetts surface water quality standards (314 CMR 4.03(2)). Several technical publications that describe toxic effects due solely to ionic constituents were cited and attached to that letter. The publications make the point that toxicity due solely to TDS is less of a regulatory problem because of rapid dilution to below toxic levels and because these constituents do not present a bioaccumulation problem and have no human health impacts. BBA still believes that this mixing zone approach would be a proper response and would result in acute toxicity tests being accomplished at dilutions less than the 100 percent effluent currently used. Dilution in the toxicity tests that accurately reflect dilutions actually occurring in the receiving water would represent a more realistic test condition.”

Additional documentation supporting the use of a mixing zone was presented in a letter from RMT Consulting Engineers to Paul Hogan of MA DEP in a letter dated March 29, 2005. Excerpts from this letter are presented below.

BBA is proposing to conduct a computer-based dispersion/mixing model and use the results to quantify a “mixing zone” for BBA's discharge. If use of a mixing zone is granted in the permit, the effect will be to change the permit test condition for acute toxicity from 100 percent effluent to a lower concentration because of the dilution afforded in the mixing zone.

The requirement for aquatic organisms to be able to live in 100 percent effluent, or to be able to live within BBA's discharge pipe, is not a realistic requirement because that condition does not physically exist at any point in the North River. BBA's discharge pipe is not in the river. Instead, BBA's discharge exits the

discharge pipe and has a freefall of several feet before impacting the river. The effluent received immediate mixing upon contact with the receiving stream. There is no evidence that BBA's effluent causes any of the deleterious effects that would prevent a mixing zone from being implemented.

According to United States Environmental Protection Agency's (USEPA's) Technical Support Document for Water Quality-based Toxics Control (EPA/505/3-90-001), "it is not always necessary to meet all water quality criteria within the discharge pipe to protect the integrity of the water body as a whole. Sometimes it is appropriate to allow for ambient concentrations above the Criteria in small areas near the outfalls. These areas are called mixing zones."

The Massachusetts surface water quality standards (314 CMR 4.03(2)) allow incorporation of a mixing zone in NPDES permits, with certain qualifications. Based on a review of those qualifications, it appears that BBA can justify the use of a mixing zone for Outfall 004 [sic]. A mixing zone is an area within a receiving stream where a discharged effluent undergoes initial dilution. Water quality criteria can be exceeded within that mixing zone as long as the wastewater does not interfere with migration or free movement of fish or other aquatic life, no nuisance conditions are created, and pollutants do not accumulate in the sediments or within the biota in toxic amounts.

RMT has successfully used the currently accepted mixing model, the Cornell Mixing Zone Expert System (CORMIX), to assess the impacts of the discharges into various receiving streams. CORMIX is a USEPA-approved software system (USEPA 1991, USEPA 1991B, and Jirka 1992) for the analysis, prediction, and design of aqueous discharges into diverse water bodies. The model can simulate BBA's discharge into the North River and will model the plume centerline, plume width and depth, and centerline dilution as the plume moves down the river. This information can be used to determine the size of an acceptable mixing zone.

If a mixing zone is developed for BBA's discharge, the effect would be to change the concentration of effluent on which acute toxicity is conducted. That concentration will be lower than the current 100 percent effluent and the diluted sample will have a much higher probability of passing the LC50 requirement. The amount of dilution that might be allowed for the toxicity test will depend on the size of the mixing zone justified by the model. Since the permitted discharge is 1.35 mgd (2001 NPDES permit), the 7Q10 flow rate of the North River is 5 mgd, the maximum dilution that could be obtained would be 21 percent. That means that BBA could have no more than 50 percent mortality of *Ceriodaphnia dubia* in a sample that was 21 percent BBA effluent and 79 percent dilution water. However, it is unknown if the CORMIX model would support a dilution at that ideal maximum value. The mixing zone modeling will likely suggest that acute toxicity tests conducted at some immediate dilution, between 21 and 100 percent BBA effluent, will best characterize BBA's mixing within the North River.

Barnhardt's position for controlling toxicity has not changed since presenting these recommendations in 2005. Barnhardt requests that the toxicity requirement in the draft NPDES permit be modified to incorporate the use of a mixing zone.

*Alternative Approaches for Controlling Toxicity*

In addition to the approach recommended in the BBA Fiberweb letter, Barnhardt presents the further supporting information that previous biological studies conducted by MA DEP does not indicate the presence of any in stream toxicity in the North River associated with the effluent from the Barnhardt facility. Based on this lack of toxicity, an alternative approach for establishing a limitation that is still protective of the receiving waters would be the elimination of the acute toxicity limitation and relying on the proposed chronic toxicity limitation. Barnhardt believes that this is a conservative approach that will successfully control impacts to the North River.

Finally, since there is limited information supporting the notion that Barnhardt effluent is having a toxic effect on the North River, Barnhardt recommends consideration to changing the species used for the toxicity testing. Use of the *Ceriodaphnia dubia* consistently yields results indicating toxicity due to the presence of dissolved salt. Barnhardt recommends consideration of an alternative species, such as *Daphnia magna*, that might be suitable substitute for the *Ceriodaphnia dubia*.

In summary, the toxicity limitation contained in the draft NPDES permit creates a permit condition that will not be possible for the existing Barnhardt treatment works to routinely meet. Barnhardt believes that previous testing conducted by MA DEP demonstrates that there is no evidence of toxicity related to Barnhardt effluent. Barnhardt believes that the required test is overly conservative and serves as the basis for committing Barnhardt to pursue a costly program aimed at removing salts from the wastewater discharge. Barnhardt requests modification of the WET limits in a manner that is still protective of the receiving waters.

**Response to Comment 5:**

*Response to Barnhardt's request that the toxicity requirement in the draft NPDES permit be modified to incorporate the use of a mixing zone:*

Acute WET limits are established to ensure that there is no acute toxicity at the edge of the acute mixing zone. Specific acute mixing zones are not defined in the Massachusetts Water Quality Standards, but acute mixing zones are defined as an area "immediately surrounding the discharge outfall, sized to prevent lethality to passing organisms" (see EPA Whole Effluent Toxicity Policy (WET) Control Policy).

The LC50 limit of  $\geq 100\%$  in the current permit was established using the Massachusetts Implementation Policy for Control of Toxic Pollutants in Surface Waters, which establishes LC50 limitations based on ranges of dilution. The Massachusetts policy recommends an acute water quality criterion of 0.3 toxic units (TU) in the receiving water. (A toxic unit is 100/LC50). This criterion is

based on an adjustment factor of one-third, used to extrapolate the LC50 to an LC1 (concentration at which 1% of the test organisms die). Therefore, the policy establishes the acute mixing zone as the area surrounding the outfall where the acute toxicity due to the discharge is greater than 0.3 TU.

In order to ensure that this criteria is met within a short distance of the effluent pipe, the Massachusetts policy establishes an end-of-pipe limit of 1.0 TU for dilutions less than or equal to 100 and 2.0 TU for dilution factors greater than 100. The acute dilution factor for the discharge based on daily maximum flow (0.89 MGD, or 1.38 cfs) and 1Q10 (6.76 cfs) is 4.90. Therefore, a limit of 1.0 TU, which is an LC50 of  $\geq 100\%$  shall continue to be required in the draft permit. This limit is based on the available dilution at the point of discharge, since Massachusetts policy establishes an end-of-pipe limit of 1.0 TU for dilutions less than or equal to 100.

The LC50 limit of  $\geq 100\%$  does not require that the test organisms shall “be able to live in 100 percent effluent, or be able to live within...[the] discharge pipe,” as Barnhardt suggests. Rather, a 100% limit means that a sample of 100% effluent shall cause no more than a 50% mortality rate. Thus, the effluent may be lethal to half of the test organisms and still meet the acute toxicity limit.

*Response to Barnhardt’s request for elimination of the acute toxicity limitation and reliance on the proposed chronic toxicity limitation:*

The current permit contains an LC50 of  $\geq 100\%$ , and the discharge through Outfall 001 has consistently violated this limit. Therefore, the acute toxicity limit shall be retained in the permit based on anti-backsliding requirements found in 40 CFR §122.44(l). The permit shall also require a chronic toxicity limit of  $\geq 5\%$ .

The Massachusetts Implementation Policy for Control of Toxic Pollutants in Surface Waters states, that for dilution factors less than 10, effluent toxicity poses a high risk to receiving waters. These waters are considered water quality limited in that the effluent limit of 1.0 Toxic Unit may not be stringent enough to protect receiving waters. The Division requires both acute and chronic end points to be reported.

Therefore, compliance with both the acute and chronic toxicity limits is necessary to ensure the discharge from the facility is not toxic under either condition.

*Response to Barnhardt’s request for consideration of an alternative species, such as Daphnia magna, as a substitute for the Ceriodaphnia dubia:*

The effluent was shown to not be acutely toxic to *Daphnia magna* (*D. magna*), another test species used for toxicity tests. It has been shown that *D. magna*

routinely exhibits less sensitivity to Total Dissolved Solids (TDS) than *C. dubia*.<sup>1</sup> These species generally show similar sensitivities to most toxicants;<sup>2</sup> however, the difference in sensitivity to TDS can be useful in characterizing TDS toxicity. Therefore, the permit shall continue to require toxicity testing using *C. dubia*, since this species has indicated higher sensitivity to the discharge from the facility, and thus is more likely to be protective of a range of species in the receiving water.

**Comment 6:**

*Testing Schedules*

Section 2 of the footnotes of Part I.A.1 specifies that quarterly samples will be collected during the second weeks of January, April, July, and October. Section 5 of the footnotes requires toxicity testing in March, June, September, and December. Barnhardt requests that the testing schedule be combined into one specific month each quarter in order to minimize the potential for confusion of the required sample collection dates.

**Response to Comment 6:**

The permit has been changed in response to this comment. The quarterly WET testing shall be collected simultaneously with quarterly parameter testing required in the Table at Part I.A.1 of the permit. Footnote 5 in Part I.A.1 has been revised to state, "Samples shall be collected during the months of January, April, July, and October." This is consistent with Footnote 2 in Part I.A.1, which states that quarterly samples shall be collected during the second weeks in January, April, July, and October.

**Comment 7:**

*Limitation of Temperature Rise of Receiving Water*

The draft permit includes a limitation indicating that the rise in temperature of the receiving water due to a discharge shall not exceed 3°F. While Barnhardt is not opposed to the concept of limiting temperature impacts on the receiving waters from the Barnhardt effluent, Barnhardt cannot accept the 3°F limitation without conducting research into determining what the appropriate limit might be and determining the proper methodology for monitoring the temperature rise in the receiving waters. Barnhardt recommends the reconsideration of this limitation in favor of collecting additional data that would support a later decision making on an appropriate limit.

**Response to Comment 7:**

State Water Quality Criteria for temperature require that Class B waters shall not exceed 68°F (20°C) based on the mean of the daily maximum temperature over a seven day period in cold water fisheries, unless naturally occurring, and that the rise in temperature due to a discharge shall not exceed 3°F (1.7°C) in rivers and

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<sup>1</sup> American Petroleum Institute (API). API. 1998. *The Toxicity of Common Ions to Freshwater and Marine Organisms*. Washington, DC, November 1998, Doc. No. 0300-029.

<sup>2</sup> Mount, D.R., and D.D. Gulley. 1992. *Development of a Salinity/Toxicity Relationship to Predict Acute Toxicity of Saline Waters to Freshwater Organisms*. Gas Research Institute, Environment and Safety Research Department, Chicago, IL, October, 1992.

streams designated as cold water fisheries. Therefore, the requirement that the rise in temperature due to the discharge from the facility shall not exceed 3°F shall be retained in the final permit, based on State Water Quality Criteria for Class B waters.

**Comment 8:**

Special Conditions C.1 specifies a requirement for the development of a Best Management Practices plan to be followed in operating the facility for cleaning tanks and other equipment in order to minimize the amounts of pollutants discharged to surface waters. Barnhardt is not opposed to the preparation of management documentation aimed at reducing or eliminating discharging pollutant to surface waters. However, Barnhardt personnel indicate that operating procedures for their bulk storage of process chemicals has never involved the periodic clean out for any reason. Barnhardt has always been able to utilize methodology that does not involve the clean out of storage tanks to demonstrate that their storage tanks are suitable for use. Barnhardt has no plans to institute a program requiring the emptying of storage tanks as part of their routine operations. For this reason, Barnhardt requests the elimination of a requirement for a Best Management Practice Plan for the clean out of their storage tanks.

**Response to Comment 8:**

This is standard language included in NPDES permits to require development of a Best Management Practices (BMP) plan to identify and describe the practices at the facility which minimize the amount of pollutants (biological and chemical) discharged to surface waters.

Since the facility currently does not perform cleaning of storage tanks and does not plan to clean storage tanks in the future, the requirement to develop BMPs to be followed for cleaning tanks has been removed from the permit. However, in the event that cleaning of storage tanks is necessary in the future, Barnhardt shall update the BMP plan to consider this practice by development of appropriate BMPs to minimize the amount of pollutants discharged to surface waters. Part I.C.1 of the final permit states, “A plan shall be developed which establishes Best Management Practices (BMPs) to be followed in operating the facility, cleaning of any equipment, and disposing of any liquid and solid waste.”

**Comment 9:**

*Development of BMPs to Reduce or Eliminate the Acute Toxicity in the Discharge*

Special Condition C.1.d specifies a requirement for the development and implementation of site specific Best Management Practices in order to reduce and/or eliminate the acute toxicity of the discharge. The requirement specifically identifies the need to investigate two alternative treatment technologies.

- Replacement of NaOH with enzymatic scouring, and
- Use of microfiltration to recover NaOH

As discussed in Section 2, Barnhardt believes that the presence of salt in the effluent for the facility is a special condition that does not result in toxicity in the receiving waters.

Consequently, we believe that the evaluation and implementation of technologies aimed solely for the removal of salt imposes an unnecessary economic burden on Barnhardt without any measurable environmental benefits to the condition of the receiving waters. Barnhardt requests elimination of this provision of the draft permit until such time that it can be demonstrated that these investments are necessary for address toxicity in the receiving waters.

**Response to Comment 9:**

Part I.A.11 of the permit requires that the permittee shall not discharge any pollutant or combination of pollutants in toxic amounts. However, the discharge from the facility has consistently failed acute toxicity tests. Therefore, Part I.C.1.d of the permit requires the permittee to “develop and implement site specific BMPs in order to reduce and/or eliminate the acute toxicity of the discharge.” The permit further requires that the BMPs include, at a minimum, investigation of the following alternative treatments: Replacement of chemical scouring using sodium hydroxide with enzymatic scouring; and use of micro/ultrafiltration using membranes to recover sodium hydroxide from spent solutions, with subsequent reuse of the recovered alkaline solution in facility processes.

In the event that investigation of these treatment technologies does not indicate potential to reduce toxicity of the discharge, implementation is not required. However, the permit does require reduction and/or elimination of the acute toxicity of the discharge in the form of development and implementation of site specific BMPs. Therefore, in the event that these treatment technologies do not reduce and/or eliminate the acute toxicity of the discharge, the permittee shall develop and implement alternative site specific BMPs to meet this permit requirement.

**Comment 10:**

Section C.1.e requires Barnhardt to develop and implement site specific BMPs to reduce and/or eliminate the sources of nitrogen at the facility. In the supporting materials provided with the draft permit on p. 19, the justification for reducing the levels of nitrogen in the facility effluent is required by the need to reduce loading in the Connecticut, Housatonic, and Thames River watersheds. While we understand the need to reduce nitrogen loading in these watersheds, it has not been demonstrated that there is any measureable benefit for either the North River or the Connecticut, Housatonic, and Thames River watersheds by reducing nitrogen loading from the facility. In essence, Barnhardt is being told to bear the financial burden to reduce nitrogen loading in its effluent with no clear justification. Barnhardt requests that this provision of the draft permit be suspended until it can be demonstrated that there is a benefit associated with the requested activity.

**Response to Comment 10:**

The facility discharges to the North River which drains to the Connecticut River via the Deerfield River in Massachusetts. The Connecticut River subsequently

drains to Long Island Sound (LIS). Hypoxic conditions in LIS, which occur annually in the summer, have been documented to result from excessive amounts of nitrogen (See comment 13, below, from CTDEP). In response to this occurrence, Connecticut and New York jointly developed a Total Maximum Daily Load (TMDL) for nitrogen which was approved by the EPA in April, 2001. In addition to a number of nitrogen reduction efforts, the TMDL specifies a 25% reduction in the estimated nitrogen load from states upstream of Connecticut (Massachusetts, Vermont, and New Hampshire).

Therefore, to reduce the occurrence of hypoxic conditions in LIS and ensure consistency with the TMDL, the draft permit requires that the permittee develop and implement site specific BMPs in order to reduce and/or eliminate the source(s) of nitrogen at the facility, as specified in Part I.C.1.e of the draft permit. This condition shall continue to be required in the final permit.

**Comment 11:**

*Conduct Study to Operate WWTP to Optimize the Removal of Nitrogen*

Section C.2 requires Barnhardt to complete an evaluation of alternative methods of operating the existing wastewater treatment facility to optimize the removal of nitrogen. In the supporting materials provided with the draft permit on p.19, the justification for reducing the levels of nitrogen in the facility effluent is required by the need to reduce loading in the Connecticut, Housatonic, and Thames River watersheds. While we understand the need to reduce nitrogen loading in these watersheds, it has not been demonstrated that there is any measureable benefit for either the North River or the Connecticut, Housatonic, and Thames River watersheds by reducing nitrogen loading from the facility. In essence, Barnhardt is being told to bear the financial burden to reduce nitrogen loading in its effluent with no clear justification. Barnhardt requests that this provision of the draft permit be suspended until it can be demonstrated that there is a benefit associated with the requested activity.

**Response to Comment 11:**

The facility discharges to the North River which drains to the Connecticut River via the Deerfield River in Massachusetts. The Connecticut River subsequently drains to Long Island Sound (LIS). Hypoxic conditions in LIS, which occur annually in the summer, have been documented to result from excessive amounts of nitrogen (See comment 13, below, from CTDEP). In response to this occurrence, Connecticut and New York jointly developed a Total Maximum Daily Load (TMDL) for nitrogen which was approved by the EPA in April, 2001. In addition to a number of nitrogen reduction efforts, the TMDL specifies a 25% reduction in the estimated nitrogen load from states upstream of Connecticut (Massachusetts, Vermont, and New Hampshire).

Therefore, to reduce the occurrence of hypoxic conditions in LIS and ensure consistency with the TMDL, as specified in Part I.C.2 of the permit, the permittee shall complete an evaluation of alternative methods of operating the existing wastewater treatment facility to optimize the removal of nitrogen, and submit a

report to EPA and MassDEP documenting this evaluation and presenting a description of recommended operational changes. The permittee shall implement the recommended operational changes in order to maintain the existing mass discharge loading of total nitrogen.

**Comment 12:**

*Error in Fact Sheet Related to pH Violation*

Page 12 of the Fact Sheet attached to the draft permit in Section 1c contained a statement indicating that the facility has violated the current low range pH of 6.5 SU on two occasions. Barnhardt's review of the Discharge Monitoring Report information did not reveal any violations in pH over the life of the permit. Barnhardt requests that this statement be corrected in any future listing of factual information about Barnhardt's compliance with its pH limitation.

**Response to Comment 12:**

Since the fact sheet is a final document and therefore cannot be altered, this response to comment serves to document the error in the fact sheet. Review of DMR data taken during the period of June 2001 through September 2009 indicates that the discharge through Outfall 001 has not violated the pH limit on any occasion.

**Comment 13:**

Barnhardt believes that the comments provided in this letter identify technical issues requiring further consideration by USEPA and MA DEP before issuing a final permit. Barnhardt requests the opportunity to meet with USEPA and MA DEP to provide further justification and to better understand the reasoning for the proposed limitations included in the permit.

**Response to Comment 13:**

EPA and MassDEP met with Barnhart on June 15<sup>th</sup> in response to this comment. Barnhardt re-iterated the comments which they submitted prior to the close of the comment period, which are outlined and responded to above, specifically the comment concerning acute toxicity.

**Comments from CTDEP:**

**Comment 14:**

The Connecticut Department of Environmental Protection (CTDEP) appreciates this opportunity to comment on the draft NPDES permit for the Barnhardt Mfg. Co. (facility). The draft permit authorizes the facility to discharge treated process wastewater as well as domestic wastewater from 21 residential homes. The facility discharges to the North River which drains to the Connecticut River via the Deerfield River in Massachusetts. The Connecticut River subsequently drains to Long Island Sound (LIS). The CTDEP has an interest in discharges to waters that drain to Long Island Sound since hypoxic conditions, which occur annually in the summer, have been documented to result from excessive amounts of nitrogen. Discharges from wastewater treatment plants contribute

to the nitrogen loading to LIS. In response to this occurrence, Connecticut and New York jointly developed a Total Maximum Daily Load (TMDL) for nitrogen which was approved by the Federal Environment Protection Agency (EPA) in April, 2001. In addition to a number of nitrogen reduction efforts, the TMDL specifies a 25% reduction in the estimated nitrogen load from states upstream of Connecticut (Massachusetts, Vermont, and New Hampshire).

The facility's draft discharge permit demonstrated initial efforts aimed at reducing the amount of nitrogen discharged to LIS from upstream states. It includes a Special Condition for the facility to maintain a nitrogen load of approximately 66 pounds/day based on an annual average of data collected during 2001-2009 and requires the facility to conduct an evaluation of optimization methods designed to maintain this nitrogen load. The draft permit also requires the facility to submit an annual report that outlines nitrogen removal efficiencies, documents the annual nitrogen load discharged, and tracks trends in the nitrogen load. The CTDEP is pleased that such stipulations targeted at nitrogen loading have been proposed in the draft NPDES permit and hopes to see this Special Condition incorporated in the final version.

**Response to Comment 14:**

The nitrogen requirements in Part I.C.1.e and Part I.C.2 shall continue to be required in the final permit. See response to comments 10 and 11, above.

**Comment 15:**

Also noted in the draft discharge permit is a requirement for monthly monitoring of nitrogen species based on composite sampling. This type of data will serve to refine nitrogen loading estimates to LIS from upstream states and assist the Connecticut River Workgroup (EPA, NEIWPCC, CT, NY, MA, VT, NH) in determining supportable management actions. However, we also recommend concurrent sampling along the process or treatment chain, especially the influent. Those data will help determine treatment efficiency and, should nutrient removal be required at some time in the future for local or Long Island Sound management, they will be helpful in determining appropriate technologies and management options.

**Response to Comment 15:**

Part I.C.2 of the permit requires the permittee to evaluate alternative methods of operating the existing wastewater treatment facility to optimize the removal of nitrogen. The permittee shall consider concurrent sampling of the effluent nitrogen along with the required monthly effluent sampling to determine treatment efficiency; however, influent sampling has not been added as a monthly requirement to the permit.

## **Comments from CRWC:**

### **Comment 16:**

Protection of existing uses is required under 40 CFR 131.12(a)(1). The North River at the confluence of the Deerfield River, 2.7 miles downstream from the discharge, is a very popular swimming hole.

#### **Response to Comment 16:**

Part VI.E of the fact sheet indicates that all existing uses of the North River must be protected. The North River is classified as a Class B water, cold water fishery, by the Commonwealth of Massachusetts (314 CMR 4.06). These waters are designated as habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. Where designated they shall be suitable as a source of public water supply with appropriate treatment. They 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.

EPA believes the limitations, monitoring requirements, and additional conditions in the final permit are sufficient to protect the existing uses of the North River.

### **Comment 17:**

CRWC supports EPA's decision to decrease the permit limits for flow, BOD, TSS, and COD. We also support the new requirement for reporting total phosphorus levels, total copper, and temperature.

#### **Response to Comment 17:**

The decreased permit limits for flow, BOD, TSS and COD shall remain in the final permit. The reporting requirements for phosphorus, copper, and temperature shall also remain in the final permit.

### **Comment 18:**

CRWC thinks that, given the lower permit limits for BOD, TSS, and COD, it does not make sense to decrease the measuring frequency at this time. We recommend keeping the existing monitoring frequency requirements, and if the facility consistently falls under the new limits, they can petition to have the frequency decreased after a year or two.

#### **Response to Comment 18:**

The current permit (as modified on August 17, 2004) requires monthly monitoring of both BOD and COD. The draft permit monthly monitoring requirements for BOD and COD have not been revised from the monthly monitoring requirements in the current permit. Thus, the monitoring frequency in the final permit shall remain unchanged as monthly.

Review of DMR data reveals that the highest monthly average TSS value during the period of June 2001 through September 2009 was 186 lbs/day. Therefore, the discharge is not expected to violate the reduced monthly average limit of 250

lbs/day. The maximum daily TSS limit, which remains unchanged from the current permit to the draft permit, has not been violated on any occasion. Thus, the monitoring frequency in the final permit for both monthly average and daily maximum shall remain as monthly (reduced from weekly in the current permit), since the reduced monthly average limit and unchanged maximum daily limit for TSS are expected to be met by the discharge.

**Comment 19:**

Page 17 of the Fact Sheet indicates that the facility consistently discharges ammonia levels significantly less than the maximum discharge limit of 63 lbs/day. The Fact Sheet says that the highest level has been 22.7 lbs/day. In the spirit of the NPDES program, which is supposed to lead to pollutant discharge *elimination*, we recommend lowering the limit to something like 30 lbs/day. Theoretically, this would not impact the company at all.

**Response to Comment 19:**

The ammonia (as N) limit is based on anti-backsliding from the September 6, 1989 permit, which required an ammonia (as N) water quality-based limit of 5.6 mg/L as a monthly average. The current permit converted the concentration-based limit to a mass-based limit of 63 lbs/day. The mass-based limit was carried over to the draft permit.

Permit effluent limitations are derived based on applicable technology and water quality standards. Permit writer guidance states that the more stringent of the technology-based limit and water quality-based limit is required to be applied as an effluent limitation in the permit.<sup>3</sup> Since the suggested limit of 30 lbs/day is not based on applicable technology or water quality standards, it has not been required as an effluent limitation in this permit. However, the mass-based limit has been recalculated based on the reduced flow limit in the permit. The water quality-based limit of 5.6 mg/L (calculated based on the average discharge pH of 8 SU) converts to a mass-based limit based on the flow of 0.89 MGD of 42 lbs/day. This limit has replaced the 63 lbs/day limit of ammonia (as N) in the final permit.

**Comment 20:**

The existing permit contained a footnote explaining what “production rate” meant. Although the draft permit does give some units of measurement, it might be a good idea to specify in the permit what “production rate” means to EPA.

**Response to Comment 20:**

A footnote has been added to the permit at Part I.A.1 to define the production rate. Footnote 11 now clarifies that production rate is the “total production rate of finished goods in lbs/day.”

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<sup>3</sup> USEPA NPDES Permit Writer’s Manual, EPA-833-B-96-003, December 1996, p. 24.

**Comment 21:**

Given the use of the North River for recreation, CRWC believes weekly *E.coli* measurements are more appropriate than the proposed change to monthly monitoring.

**Response to Comment 21:**

EPA has reconsidered the reduction in monitoring for *E. coli* from weekly to monthly. In response to this comment, EPA has determined that weekly monitoring in place of monthly monitoring is appropriate for this parameter since the monitoring requirement has been changed from fecal coliform to *E.coli* and the facility accepts domestic wastewater from approximately 21 homes in the Village of Griswoldville. The monitoring requirement for *E. coli* has therefore been changed from monthly to weekly.

A condition has also been added to the permit, Part I.A.1, footnote 12, to allow the permittee to request a reduction in monitoring as follows:

The permittee may submit a written request to the EPA requesting a reduction in the frequency (to not less than once per month) of required testing for *E. coli*, after completion of an entire season (April 1<sup>st</sup> – October 31<sup>st</sup>) of weekly successive monitoring results of effluent, all of which must demonstrate levels of *E. coli* below the permit effluent limitations. Until written notice is received by certified mail from the EPA indicating that the *E. coli* testing requirement has been changed, the permittee is required to continue testing at the frequency specified in the permit.

**Comment 22:**

CRWC supports the permit requirement of a BMP plan to reduce or eliminate the acute toxicity of the effluent. We recommend that permit section C(1) be edited to say, “A plan shall be developed and implemented that establishes Best Management Practices (BMPs)...” The word implemented is mentioned in subsection d, but it is important to say it up front in the main heading to this section. CRWC also recommends that EPA establish a deadline for implementation some time after the deadline for the BMP plan and before the expiration date of the renewed permit.

**Response to Comment 22:**

This is standard permit language common to recently issued NPDES permits. No change to the permit was made in response to this comment.

**Comment 23:**

Section VIII of the Fact Sheet says that the North River is not designated Essential Fish Habitat for any federally managed species. We are not sure if EPA is aware that the MA Department of Fish and Game stocks Atlantic salmon fry in the east and west branches of the North River upstream of the discharge in April each year. Any salmon that reach smolt stage and migrate out of Long Island Sound will swim past the outfall location. It also seems possible that some fry stocked further upstream may find habitat in lower sections of the North River. Atlantic salmon is a federally managed species.

**Response to Comment 23:**

Since the fact sheet is a final document, it cannot be edited. However, this response to comment shall serve to document the concerns of the CRWC. EPA believes the requirements in the permit including the effluent limitations, monitoring requirements, and site specific BMPs are sufficient to minimize adverse effects to EFH. If adverse effects are detected as a result of this permit action, NMFS will be notified and an EFH consultation will promptly be initiated.

**Section 401 Certification**

In its Section 401 certification of the permit, MassDEP states that the conditions of the permit listed below are more stringent than necessary to achieve compliance with sections 208(e), 301, 302, 303, 306, and 307 of the Federal Act, and with the provisions of the Massachusetts Clean Waters Act, M.G.L. c.21, ss.26-53, and regulations promulgated thereunder. Specifically, MassDEP raised the issue of whether or not the existing instream monitoring information is a sufficient indicator that there is no concern of acute toxicity resulting from the effluent, and thus grounds to remove the requirement for acute toxicity testing in the permit with addition of more frequent chronic testing. MassDEP states:

The acute tests are not indicative of the actual instream conditions. MassDEP and the facility have conducted instream chronic and acute tests which documented no evidence of instream acute toxicity. Therefore, the acute whole effluent toxicity (WET) testing required in Part I.A.1 should be replaced with more frequent chronic testing at 6 tests per year.

EPA has consulted MassDEP and reviewed all available monitoring data, including surface water quality biological impact information collected downstream. However, the results of these ambient biological tests (collected over two miles downstream from the discharge) are not directly related to the potential effluent acute toxicity. Acute mixing zones are defined as an area “immediately surrounding the discharge outfall, sized to prevent lethality to passing organisms” (see EPA Whole Effluent Toxicity Policy (WET) Control Policy). Since the biological tests were performed more than two miles downstream, they are not valid indicators of the acute toxicity of the discharge through Outfall 001, which has consistently violated the LC50 limit in the current permit of  $\geq 100\%$ . Therefore EPA does not believe that the available ambient monitoring data is a sufficient basis for removal of the acute WET testing requirement.

Additionally, EPA also does not believe that replacement of the acute WET testing requirement with chronic testing is a valid option. The Massachusetts Implementation Policy for Control of Toxic Pollutants in Surface Waters states, that for dilution factors less than 10, effluent toxicity poses a high risk to receiving waters. These waters are considered water quality limited in that the effluent limit of 1.0 Toxic Unit may not be stringent enough to protect receiving waters. The Division requires both acute and

chronic end points to be reported. Therefore, compliance with both the acute and chronic toxicity limits is necessary to ensure the discharge from the facility is not toxic under either condition.

Therefore, EPA does not have any reason to deviate from the acute WET testing requirement in the draft permit. The permit shall continue to require acute WET testing. The current permit contains an LC50 of  $\geq 100\%$ , and the discharge through Outfall 001 has consistently violated this limit. Therefore, the acute toxicity limit shall be retained in the permit based on anti-backsliding requirements found in 40 CFR §122.44(l).

Section 401(a)(1) of the CWA requires all NPDES permit applicants to obtain a certification from the appropriate state agency validating the permit's compliance with the pertinent federal and state water pollution control standards. *See* CWA § 401(a)(1). The regulatory provisions pertaining to state certification provide that EPA may not issue a permit until a certification is granted or waived by the state in which the discharge originates. 40 C.F.R. § 124.53(a). The regulations further provide that "when certification is required...no final permit shall be issued...unless the final permit incorporates the requirements specified in the certification under § 124.53(e)." 40 C.F.R. § 124.55(a). Section 124.53(e) provides that the State certification shall include "any conditions more stringent than those in the draft permit which the State finds necessary to "assure compliance with, among other things, state water quality standards, 40 C.F.R. § 124.53(e)(2), and shall include "[a] statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law, including water quality standards," *id.* § 124.53(e)(3). Under 40 C.F.R. § 124.55(c), "a State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition."

EPA's "duty under CWA section 401 to defer to considerations of State law is intended to prevent EPA from *relaxing* any requirements, limitations, or conditions imposed by the State law." *In re City of Jacksonville*, 4 E.A.D. 150, 157 (EAB 1992); *In re City of Moscow*, 10 E.A.D. 135, 151 (EAB 2001); *accord In re Ina Rd. Water Pollution Control Facility*, 2 E.A.D. 99, 100 (CJO 100). However, "when the Region reasonably believes that a state [WQS] requires a more stringent permit limitation than that specified by the state, the Region has an independent *duty* under section 301(b)(1)(C) of the CWA to include more stringent permit limitations." *Moscow*, 10 E.A.D. at 151 (emphasis in original); *accord In re City of Marlborough*, 12 E.A.D. 235, 252 n. 22 (EAB 2005); *Jacksonville*, 4 E.A.D. at 158; *Ina Rd.*, 2 E.A.D. at 100 (stating that such "duty is independent of State certification under [section] 401"). EPA's regulations similarly interpret the statute to impose such an independent duty when EPA issues an NPDES permit. 40 C.F.R. §§ 122.4(a), (d); 122.44(d)(1), (5).

Thus, EPA is requiring a permit that is more stringent than the Section 401 certification language. EPA believes the permit, as written, is consistent with the Massachusetts Implementation Policy for Control of Toxic Pollutants in Surface Waters, as well as with

sections 208(e), 301, 302, 303, 306, and 307 of the Federal Act, and with the provisions of the Massachusetts Clean Waters Act, M.G.L. c.21, ss.26-53, and regulations promulgated thereunder. EPA believes the acute WET testing of the effluent is crucial, since the discharge from the facility has consistently failed acute toxicity tests.