Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

NPDES PERMIT

issued to

Sumitomo Bakelite North America, Inc.
24 Mill Street
Manchester, CT 06042

Location Address:

24 Mill Street
Manchester, CT 06042

Permit ID: CT0003379

Receiving Stream: Lydall Brook

Stream Segment Number: CT4500-12_02

Permit Expires: September 21, 2020

SECTION 1: GENERAL PROVISIONS

(A) This permit is reissued in accordance with section 22a-430 of Chapter 446k, Connecticut General Statutes ("CGS"), and Regulations of Connecticut State Agencies ("RCSA") adopted thereunder, as amended, and section 402(b) of the Clean Water Act, as amended, 33 USC 1251, et. seq., and pursuant to an approval dated September 26, 1973, by the Administrator of the United States Environmental Protection Agency for the State of Connecticut to administer an N.P.D.E.S. permit program.

(B) Sumitomo Bakelite North America, Inc., ("Permittee"), shall comply with all conditions of this permit including the following sections of the RCSA which have been adopted pursuant to section 22a-430 of the CGS and are hereby incorporated into this permit. Your attention is especially drawn to the notification requirements of subsections (i)(2), (i)(3), (j)(1), (j)(6), (j)(8), (j)(9)(C), (j)(10)(C), (j)(11)(C), (D), (E), and (F), (k)(3) and (4) and (l)(2) of section 22a-430-3.

Section 22a-430-3 General Conditions

(a) Definitions
(b) General
(c) Inspection and Entry
(d) Effect of a Permit
(e) Duty
(f) Proper Operation and Maintenance
(g) Sludge Disposal
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Section 22a-430-4 Procedures and Criteria

(a) Duty to Apply
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(c) Application Requirements
(d) Preliminary Review
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(t) Discharges to POTWs - Prohibitions

(C) Violations of any of the terms, conditions or limitations contained in this permit may subject the Permittee to enforcement action including, but not limited to, penalties, injunctions and/or forfeitures pursuant to applicable sections of the CGS and RCSA.

(D) Any false statement in any information submitted pursuant to this permit may be punishable as a criminal offense under section 22a-438 or 22a-131a of the CGS or in accordance with section 22a-6, under section 53a-157b of the CGS.

(E) The authorization to discharge under this permit may not be transferred without prior written approval of the Commissioner of Energy and Environmental Protection ("Commissioner"). To request such approval, the Permittee and proposed transferee shall register such proposed transfer with the Commissioner, at least thirty (30) days prior to the transferee becoming legally responsible for creating or maintaining any discharge which is the subject of the permit transfer. Failure, by the transferee, to obtain the Commissioner's approval prior to commencing such discharge(s) may subject the transferee to enforcement action for discharging without a permit pursuant to applicable sections of the CGS and RCSA.

(F) No provision of this permit and no action or inaction by the Commissioner shall be construed to constitute an assurance by the Commissioner that the actions taken by the Permittee pursuant to this permit will result in compliance or prevent or abate pollution.

(G) Nothing in this permit shall relieve the Permittee of other obligations under applicable federal, state and local law.

(H) An annual fee shall be paid for each year this permit is in effect as set forth in section 22a-430-7 of the RCSA.

SECTION 2: DEFINITIONS

(A) The definitions of the terms used in this permit shall be the same as the definitions contained in section 22a-423 of the CGS and sections 22a-430-3(a) and 22a-430-6 of the RCSA, except for "No Observable Acute Effect Level (NOAEL)" which is redefined below.

(B) In addition to the above, the following definitions shall apply to this permit:
"-----" in the limits column on the monitoring table means a limit is not specified but a value must be reported on

the discharge monitoring report ("DMR").

"Average Monthly Limit"; means the maximum allowable "Average Monthly Concentration" as defined in section 22a-430-3(a) of the RCSA when expressed as a concentration (e.g. mg/l). Otherwise, it means "Average Monthly Discharge Limitation" as defined in section 22a-430-3(a) of the RCSA.

"Critical Test Concentration (CTC)" means the specified effluent dilution at which the Permittee is to conduct a single-concentration Aquatic Toxicity test.

"Daily Concentration" means the concentration of a substance as measured in a daily composite sample, or the arithmetic average of all grab sample results defining a grab sample average.

"Daily Quantity" means the quantity of waste discharged during an operating day.

"Instantaneous Limit" means the highest allowable concentration of a substance as measured by a grab sample, or the highest allowable measurement of a parameter as obtained through instantaneous monitoring.

"In stream Waste Concentration (IWC)" means the concentration of a discharge in the receiving water after mixing has occurred in the allocated zone of influence.

"Maximum Daily Limit", means the maximum allowable "Daily Concentration" (defined above) when expressed as a concentration (e.g. mg/l). Otherwise, it means the maximum allowable "Daily Quantity" as defined above, unless it is expressed as a flow quantity. If expressed as a flow quantity, it means "Maximum Daily Flow" as defined in section 22a-430-3(a) of the RCSA.

"mg/l" means milligrams per liter.

"NA" as a Monitoring Table abbreviation means "not applicable".

"NR" as a Monitoring Table abbreviation means "not required".

"No Observable Acute Effect Level (NOAEL)" means any concentration equal to or less than the critical test concentration in a single concentration (pass/fail) toxicity test conducted pursuant to section 22a-430-3(j)(7)(A)(i) RCSA demonstrating greater than 50% survival of test organisms in 100% (undiluted) effluent and 90% or greater survival of test organisms at the CTC.

"Quarterly", in the context of a sampling frequency, means sampling is required in the months of January, April, July and October.

"Range During Month" ("RDM"), as a sample type, means the lowest and the highest values of all of the monitoring data for the reporting month.

"Range During Sampling" ("RDS"), as a sample type, means the maximum and minimum of all values recorded as a result of analyzing each grab sample of; 1) a Composite Sample, or, 2) a Grab Sample Average. For those Permittees with continuous monitoring and recording pH meters, Range During Sampling means the maximum and minimum readings recorded with the continuous monitoring device during the Composite or Grab Sample Average sample collection.

"Semi-Annually" in the context of a sampling frequency, means the sample must be collected in the months of April and October.

"µg/l" means micrograms per liter.

SECTION 3: COMMISSIONER'S DETERMINATION

(A) The Commissioner has issued a final determination and found that continuance of the existing discharge will not cause pollution of the waters of the state. The Commissioner's decision is based on Application No. 201302970 for permit reissuance received on June 4, 2013 and the administrative record established in the processing of that application.

(B) (1) From the issuance of this permit through and including September 30, 2015, the Commissioner hereby authorizes the Permittee to discharge in accordance with the terms and conditions of Permit No. CT0003379, issued by the Commissioner to the Permittee on December 8, 2008, the previous application submitted by the Permittee on August 28, 2007, and all modifications and approvals issued by the Commissioner or the Commissioner's authorized agent for the discharge and/or activities authorized by, or associated with, Permit No. CT0003379, issued by the Commissioner to the Permittee on December 8, 2008.

(2) From October 1, 2015 until this permit expires or is modified or revoked, the Commissioner hereby authorizes the Permittee to discharge in accordance with the terms and conditions of Permit No. CT0003379, issued by the Commissioner to the Permittee on September 22, 2015, Application No. 201302970 received by the Department on June 4, 2013, and all modifications and approvals issued by the Commissioner or the Commissioner's authorized agent for the discharge and/or activities authorized by, or associated with, Permit No. CT0003379, issued by the Commissioner to the Permittee on September 22, 2015.

(C) The Commissioner reserves the right to make appropriate revisions to the permit in order to establish any appropriate effluent limitations, schedules of compliance or other provisions which may be authorized under the Federal Clean Water Act or the CGS or regulations adopted thereunder, as amended. The permit as modified or renewed under this paragraph may also contain any other requirements of the Federal Clean Water Act or CGS or regulations adopted thereunder which are then applicable.

(D) This permit includes a determination regarding section 316(a) of the Federal Water Pollution Control Act 33 U.S.C. § 1326(a) regarding the thermal component of the discharge, and compliance with this permit is sufficient to assure the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife in and on the receiving waters.

SECTION 4: GENERAL EFFLUENT LIMITATIONS

(A) No discharge shall contain, or cause in the receiving stream, a visible oil sheen or floating solids; or, cause visible discoloration or foaming in the receiving stream.

(B) No discharge shall cause acute or chronic toxicity in the receiving water body beyond any zone of influence specifically allocated to that discharge in this permit.

(C) The temperature of any discharge shall not increase the temperature of the receiving stream above 85°F, or, in any case, raise the normal temperature of the receiving stream more than 4°F.

SECTION 5: SPECIFIC EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

(A) The discharge shall not exceed and shall otherwise conform to the specific terms and conditions listed below. The discharge is restricted by, and shall be monitored in accordance with, the table below:

Table A

Discharge Serial Number: DSN 001-1 | **Monitoring Location:** 1

Wastewater Description: Non contact cooling water

Monitoring Location Description: Discharge pipe at riverbank near southeast corner of the facility

Allocated Zone of Influence (ZOI): 22,646 gph | **In stream waste concentration (IWC):** 42.4%

PARAMETER	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			Minimum Level Test
		Average Monthly Limit	Maximum Daily Limit	Sample/ Reporting Frequency [2]	Sample Type or Measurement to be reported	Instantaneous limit or required range	Sample/ Reporting Frequency [2]	Sample Type or measurement to be reported	
Aquatic Toxicity, Daphnia pulex[4] NOAEL = 100%	%	NA	≥ 90%	Quarterly	Daily Composite	≥ 90%	NR	Grab	
Aquatic Toxicity, Pimephalas promelas [4] NOAEL = 100%	%	NA	≥ 90%	Quarterly	Daily Composite	≥ 90%	NR	Grab	
Chlorine, Total residual [6]	µg/l	NA	NA	NR	NA	6.5	Quarterly	Grab	*
Copper, Total [5]	µg/l	4.9	11.86	Quarterly	Daily Composite	17.79	NR	Grab	*
Flow Rate (Average Daily) [1]	gpd	400,000	NA	Continuous	Total Daily Flow	NA	NR	NA	
Flow, Maximum during 24 hr period [1]	gpd	NA	450,000	Continuous	Total Daily Flow	NA	NR	NA	
Flow (Day of Sampling)	gpd	NA	450,000	Quarterly	Total Daily Flow	NA	NR	NA	
Lead, Total [5]	µg/l	.79	1.59	Quarterly	Daily Composite	2.38	NR	Grab	*
Oil and grease, Total [6]	µg/l	NA	NA	NR	NA	5.0	Quarterly	Grab	
pH, Minimum	S.U.	NA	NA	NR	NA	6.0	Quarterly	Grab	
pH, Maximum	S.U.	NA	NA	NR	NA	9.0	Quarterly	Grab	
Temperature	°F	NA	NA	NR	NA	85	Quarterly	Grab	
Total Suspended Solids [5]	mg/l	20	30	Quarterly	Daily Composite	45.0	NR	Grab	
Total volatile Organics	mg/l	NA	NA	NR	NA	---	Semi-annually	Grab	
Zinc, Total [5]	mg/l	---	---	Quarterly	Daily Composite	NA	NR	Grab	*

Table Footnotes:

[1] For this parameter, the Permittee shall maintain at the facility a record of the total flow for each day of discharge and shall report the Average Daily Flow and the Maximum Daily Flow for each sampling month (January, April, July and October).

[2] The first entry in this column is the 'Sample Frequency'. If a 'Reporting Frequency' does not follow this entry and the 'Sample Frequency' is more frequent than monthly then the 'Reporting Frequency' is monthly. If the 'Sample Frequency' is specified as monthly, or less frequent, then the 'Reporting Frequency' is the same as the 'Sample Frequency'.

[3] Minimum Level Test refers to Section 6, Paragraph A(3) of this permit.

[4] The results of the toxicity tests are recorded in % survival. The Permittee shall report the % survival result on the DMR based on criteria in Section 6(B) of this permit.

[5] Indicates that testing for this parameter shall be performed on the same sample used for aquatic toxicity testing.

[6] Indicates that testing for this parameter shall be performed on the same day as aquatic toxicity testing.

(1) All samples shall be comprised of only the wastewater described in this table. Samples shall be collected prior to combination with receiving waters or wastewater of any other type, and after all approved treatment units, if applicable. All samples collected shall be representative of the discharge during standard operating conditions.

(2) In cases where limits and sample type are specified but sampling is not required by this permit, the limits specified shall apply to all samples which may be collected and analyzed by the Department of Energy and Environmental Protection personnel, the Permittee, or other parties.

SECTION 6: SAMPLE COLLECTION, HANDLING AND ANALYTICAL TECHNIQUES

(A) Chemical Analysis

(1) Chemical analyses to determine compliance with effluent limits and conditions established in this permit shall be performed using the methods approved by the Environmental Protection Agency pursuant to 40 CFR 136 unless an alternative method has been approved in writing in accordance with 40 CFR 136.4 or as provided in section 22a-430-3(j)(7) of the RCSA. Chemicals which do not have methods of analysis defined in 40 CFR 136 shall be analyzed in accordance with methods specified in this permit.

(2) All metals analyses identified in this permit shall refer to analyses for Total Recoverable Metal as defined in 40 CFR 136 unless otherwise specified.

(3) The Minimum Levels specified below represent the concentrations at which quantification must be achieved and verified during the chemical analyses for the parameters identified in Section 5 Table A. Analyses for these parameters must include check standards within ten percent of the specified Minimum Level or calibration points equal to or less than the specified Minimum Level.

Parameter	Minimum Level
Chlorine, total residual	20.0 ug/L
Copper	5.0 ug/L
Lead	5.0 ug/L
Zinc	10.0 ug/L

(4) The value of each parameter for which monitoring is required under this permit shall be reported to the maximum level of accuracy and precision possible consistent with the requirements of this section of the permit.

(5) Effluent analyses for which quantification was verified during the analysis at or below the minimum levels specified in this section and which indicate that a parameter was not detected shall be reported as "less than x" where 'x' is the numerical value equivalent to the analytical method detection limit for that analysis.

(6) Results of effluent analyses which indicate that a parameter was not present at a concentration greater than or equal to the Minimum Level specified for that analysis shall be considered equivalent to zero (0.0) for purposes of determining compliance with effluent limitations or conditions specified in this permit.

(B) Acute Aquatic Toxicity Test

(1) Samples for monitoring of Aquatic Toxicity shall be collected and handled as prescribed in "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (EPA/821-R-02-012).

(a) Composite samples shall be chilled as they are collected. Grab samples shall be chilled immediately following collection. Samples shall be held at 4 degrees Centigrade until Aquatic Toxicity testing is initiated.

(b) Effluent samples shall not be dechlorinated, filtered, or, modified in any way, prior to testing for Aquatic Toxicity unless specifically approved in writing by the Commissioner for monitoring at this facility.

(c) Chemical analyses of the parameters identified in Section 5 Table A shall be conducted on an aliquot of the same sample tested for Aquatic Toxicity.

(i) At a minimum, pH, specific conductance, total alkalinity, total hardness, and total residual chlorine shall be measured in the effluent sample and, during Aquatic Toxicity tests, in the highest concentration of test solution and in the dilution (control) water at the beginning of the test and at test termination. If Total Residual Chlorine is not detected at test initiation, it does not need to be measured at test termination. Dissolved oxygen, pH, and temperature shall be measured in the control and all test concentrations at the beginning of the test, daily thereafter, and at test termination.

(d) Tests for Aquatic Toxicity shall be initiated within 24 hours of sample collection.

(2) Monitoring for Aquatic Toxicity to determine compliance with the permit limit on Aquatic Toxicity (invertebrate) above shall be conducted for 48-hours utilizing neonatal Daphnia pulex (less than 24-hours old)

(3) Monitoring for Aquatic Toxicity to determine compliance with the permit limit on Aquatic Toxicity (vertebrate) above shall be conducted for 48-hours utilizing larval Pimephales promelas (1-14 days old with no more than 24-hours range in age).

(4) Tests for Aquatic Toxicity shall be conducted as prescribed for static non-renewal acute tests in "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (EPA/821-R-02-012), except as specified below.

(a) For Aquatic Toxicity Limits and for monitoring only conditions, expressed as an NOAEL value, tests shall be conducted at a specified Critical Test Concentration (CTC) equal to the Aquatic Toxicity Limit, or 100% in the case of monitoring only conditions, as prescribed in section 22a-430-3(j)(7)(A)(I) of the Regulations of Connecticut State Agencies.

(b) Organisms shall not be fed during the tests.

(c) Copper nitrate shall be used as the reference toxicant in tests with freshwater organisms.

(d) Synthetic freshwater prepared with deionized water adjusted to a hardness of 50 mg/L (plus or minus 5 mg/L) as CaCO3 shall be used as dilution water in tests with freshwater organisms.

(5) Compliance with limits on Aquatic Toxicity shall be determined as follows:

(a) For limits expressed as an NOAEL value, compliance shall be demonstrated when the results of a valid pass/fail Aquatic Toxicity test indicates there is greater than 90% or greater survival in the undiluted effluent.

(C) The Permittee shall annually monitor the chronic toxicity of the DSN 001-1 in accordance with the following specifications.

(1) Chronic toxicity testing of the discharge shall be conducted annually during July, August, or September of each year. The Permittee shall record and submit the stream flow of the Hockanum River in cfs as measured at the U.S.G.S. gauging station 01192500 located in East Hartford, CT.

(2) Chronic toxicity testing shall be performed on the discharge in accordance with the test methodology established in "Short term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms" (EPA-821-R-02-013) as referenced in 40 CFR 136 for Cerio daphnia survival and

reproduction and Fathead Minnow larval survival and growth.

(3) Chronic toxicity tests shall utilize a minimum of five effluent dilutions prepared using a dilution factor of 0.5 (100% effluent, 50% effluent, 25 % effluent, 12.5 % effluent, 6.25 % effluent, 0 % effluent).

(4) Lydall Brook water collected immediately upstream of the area influenced by the discharge shall be used as site water control (0% effluent) and dilution water in the toxicity tests.

(5) A laboratory water control consisting of synthetic freshwater prepared in accordance with EPA-821-R-02-013 at a hardness of 50±5 mg/l shall be included in the test protocol in addition to the site-water control.

(6) Daily composite samples of the discharge and grab samples of the Lydall Brook for use as site water control and dilution water shall be collected on: day 0, for test solution renewal on day 1 and day 2 of the test; day 2, for test solution renewal on day 3 and day 4 of the test; and day 4, for test solution renewal on day 5, 6, and 7 of the test. Samples shall not be dechlorinated, pH or hardness adjusted, or chemically altered in any way.

(7) All samples of the discharge and the Lydall Brook water used in the chronic toxicity test shall, at a minimum, be analyzed and results reported in accordance with the provisions listed in Section 6(A) of this permit for the following parameters:

pH	Copper (Total recoverable and dissolved)
Hardness	Lead (Total recoverable and dissolved)
Alkalinity	Nickel (Total recoverable and dissolved)
Conductivity	Nitrogen, Ammonia (total as N)
Chlorine, (Total residual)	Nitrogen, Nitrate (Total as N)
Solids, Total Suspended	Nitrogen, Nitrite (Total as N)
Zinc, (Total recoverable and dissolved)	

SECTION 7: REPORTING REQUIREMENTS

(A) The results of chemical analyses and any aquatic toxicity test required above shall be entered on the DMR, provided by this office, and reported to the Bureau of Materials Management and Compliance Assurance (Attn: DMR Processing) at the following address. Except for continuous monitoring, any monitoring required more frequently than monthly shall be reported on an attachment to the DMR, and any additional monitoring conducted in accordance with 40 CFR 136 or other methods approved by the Commissioner shall also be included on the DMR, or as an attachment, if necessary. The report shall also include a detailed explanation of any violations of the limitations specified. The DMR shall be received at this address by the last day of the month following the month in which samples are collected.

Water Permitting and Enforcement Division (Attn: DMR Processing)
Bureau of Materials Management and Compliance Assurance
Connecticut Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

(B) Complete and accurate aquatic toxicity test data, including percent survival of test organisms in each replicate test chamber, LC50 values and 95% confidence intervals for definitive test protocols, and all supporting chemical/physical measurements performed in association with any aquatic toxicity test, including measured daily flow and hours of operation for the 30 consecutive operating days prior to sample collection if compliance with a limit on Aquatic Toxicity is based on toxicity limits based on actual flows described in Section 7, shall be entered on the Aquatic Toxicity Monitoring Report form (ATMR) and sent to the Bureau of Water Protection and Land Reuse at the following address. The ATMR shall be received at this address by the last day of the month following the month in which samples are collected.

Bureau of Water Protection and Land Reuse (Attn: Aquatic Toxicity)
Connecticut Department of Energy and Environmental Protection

79 Elm St.
Hartford, CT 06106-5127

(C) If this permit requires monitoring of a discharge on a calendar basis (e.g., monthly, quarterly), but a discharge has not occurred within the frequency of sampling specified in the permit, the Permittee must submit the DMR and ATMR, as scheduled, indicating "NO DISCHARGE". For those Permittees whose required monitoring is discharge dependent (e.g., per batch), the minimum reporting frequency is monthly. Therefore, if there is no discharge during a calendar month for a batch discharge, a DMR must be submitted indicating such by the end of the following month.

(D) NetDMR Reporting Requirements

(1) Prior to one-hundred and eighty (180) days after the issuance of this permit, the Permittee may either submit monitoring data and other reports to the Department in hard copy form or electronically using NetDMR, a web-based tool that allows Permittees to electronically submit DMRs and other required reports through a secure internet connection. Unless otherwise approved in writing by the Commissioner, no later than one-hundred and eighty (180) days after the issuance of this permit, the Permittee shall begin reporting electronically using NetDMR. Specific requirements regarding subscription to NetDMR and submittal of data and reports in hard copy form and using NetDMR are described below:

(a) Submittal of *NetDMR Subscriber Agreement*

On or before fifteen (15) days after the issuance of this permit, the Permittee and/or the person authorized to sign the Permittee's DMRs ("Signatory Authority") as described in section 22a-430-3(b)(2) of the RCSA shall contact the Department at deep.netdmr@ct.gov and initiate the NetDMR subscription process for electronic submission of DMR information. Information on NetDMR is available on the Department's website at www.ct.gov/deep/netdmr. On or before ninety (90) days after issuance of this permit, the Permittee shall submit a signed and notarized copy of the ***Connecticut DEEP NetDMR Subscriber Agreement*** to the Department.

(b) Submittal of Reports Using NetDMR

Unless otherwise approved by the Commissioner, on or before one-hundred and eighty (180) days after issuance of this permit, the Permittee and/or the Signatory Authority begin electronically submitting DMRs and reports required under this permit to the Department using NetDMR in satisfaction of the DMR submission requirement in paragraph (A) of this Section of this permit.

DMRs shall be submitted electronically to the Department no later than the thirtieth (30th) day of the month following the completed reporting period. All reports required under the permit, including any monitoring conducted more frequently than monthly or any additional monitoring conducted in accordance with 40 CFR 136, shall be submitted to the Department as an electronic attachment to the DMR in NetDMR. Once a Permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to the Department. Permittee shall also electronically file any written report of non-compliance described in paragraph (A) of this Section and in the following Section of this Permit as an attachment in NetDMR. NetDMR is accessed from: https://netdmr.epa.gov/netdmr/public/home.htm.

(c) Submittal of NetDMR Opt-Out Requests

If the Permittee is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for electronically submitting DMRs and reports, the Commissioner may approve the submission of DMRs and other required reports in hard copy form ("opt-out request"). Opt-out requests must be submitted in writing to the Department for written approval on or before fifteen (15) days prior to the date the Permittee would be required under this permit to begin filing DMRs and other reports using NetDMR. This demonstration shall be valid for twelve (12) months from the date of the Department's approval and shall thereupon expire. At such time, DMRs and reports shall be submitted electronically to the Department using NetDMR unless the

Permittee submits a renewed opt-out request and such request is approved by the Department.

All opt-out requests and requests for the NetDMR subscriber form should be sent to the following address or by email at deep.netdmr@ct.gov:

Attn: NetDMR Coordinator
Connecticut Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

SECTION 8: RECORDING AND REPORTING OF VIOLATIONS, ADDITIONAL TESTING REQUIREMENTS

(A) If any sample analysis indicates that an Aquatic Toxicity effluent limitation in Section 5 of this permit has been exceeded or that the test was invalid, another sample of the effluent shall be collected and tested for Aquatic Toxicity and associated chemical parameters, as described above in Section 5 and Section 6, and the results reported to the Bureau of Materials Management and Compliance Assurance (Attn: DMR Processing), at the address listed above, within thirty (30) days of the exceedance or invalid test. Results of all tests, whether valid or invalid, shall be reported.

(B) If any two consecutive test results or any three test results in a twelve month period indicates that an Aquatic Toxicity Limit has been exceeded, the Permittee shall immediately take all reasonable steps to eliminate toxicity wherever possible and shall submit a report to Bureau of Materials Management and Compliance Assurance (Attn: Aquatic Toxicity) for the review and approval of the Commissioner in accordance with section 22a-430-3(j)(10)(c) of the RCSA describing proposed steps to eliminate the toxic impact of the discharge on the receiving water body. Such a report shall include a proposed time schedule to accomplish toxicity reduction and the Permittee shall comply with any schedule approved by the Commissioner.

(C) The Permittee shall notify the Bureau of Materials Management and Compliance Assurance, Water Permitting and Enforcement Division, within seventy-two (72) hours and in writing within thirty days of the discharge of any substance listed in the application but not listed in the permit if the concentration or quantity of that substance exceeds two times the level listed in the application.

This permit is hereby issued on September 22, 2015

Michael Sullivan
Deputy Commissioner
Department of Energy and Environmental Protection

MS/OF

WASTEWATER DISCHARGE PERMIT: DATA TRACKING AND TECHNICAL FACT SHEET

Permittee: Sumitomo Bakelite North America, Inc.

PERMIT, ADDRESS, AND FACILITY DATA

PERMIT #:CT0003379 *APPLICATION #: 201302970*

Mailing Address:						*Location Address:*					
Street:	*24 Mill Street*					*Street:*	*24 Mill Street*				
City:	*Manchester*	*ST:*	*CT*	*Zip:*	*06042*	*City:*	*Manchester*	*ST:*	*CT*	*Zip:*	*06042*
Contact Name:	*Andrew Chambers*					*DMR Contact*	*Andrew Chambers*				
Phone No.:	*(860) 533-6660*					*Phone No.:*	*(860) 533-6660*				
Contact E-mail:	*achambers@sbna-inc.com*					*DMR Contact E-mail:*	*achambers@sbna-inc.com*				

PERMIT INFORMATION

DURATION *5 YEAR X* *10 YEAR ___* *30 YEAR ___*

TYPE *New _* *Reissuance X* *Modification ___*

CATEGORIZATION *POINT (X)* *NON-POINT ()*

NPDES (X) *PRETREAT ()* *GROUND WATER (UIC) ( )* *GROUND WATER (OTHER) ( )*

*NPDES MAJOR **(MA)*** ___
*NPDES SIGNIFICANT MINOR or PRETREAT SIU **(SI)*** ___
*NPDES or PRETREATMENT MINOR **(MI)*** X
*PRETREAT SIGNIFICANT INDUS USER **(SIU)*** ___
*PRETREAT CATEGORICAL **(CIU)*** ___

SIC Code 3087

POLLUTION PREVENTION MANDATE _ *ENVIRONMENTAL EQUITY ISSUE ___*

SOLVENT MANAGEMENT PLAN

IS THE FACILITY OPERATING UNDER AN APPROVED SOLVENT MANAGEMENT PLAN? Yes _ No X
(Not applicable)

COMPLIANCE SCHEDULE *YES__* *NO X*

POLLUTION PREVENTION ___ *TREATMENT REQUIREMENT___* *WATER CONSERVATION___*

WATER QUALITY REQUIREMENT ___ *REMEDIATION ___* *OTHER ___*

RECENT ENFORCEMENT HISTORY

IS THE PERMITTEE SUBJECT TO A PENDING ENFORCEMENT ACTION? YES ___ NO X

OWNERSHIP CODE

Private X *Federal ___* *State ___* *Municipal (town only) ___* *Other public ___*

DEEP STAFF ENGINEER *Oluwatoyin Fakilede*

PERMIT FEES

Discharge Code	*DSN Number*	*Annual Fee*
102000b	*DSN 001-1*	*$ 2,290.00*

FOR NPDES DISCHARGES

Drainage basin Code: 4500 *Water Quality Standard: A*

NATURE OF BUSINESS GENERATING DISCHARGE

Sumitomo Bakelite North America, Inc. produces thermoset molding compounds through various production lines and related equipment. The process of compounding raw materials to produce molding compounds generates some heat. In order to reduce this heat, cold water is pumped from an on-site well through piping and cooling jackets and subsequently discharged.

PROCESS AND TREATMENT DESCRIPTION (by DSN)

DSN 101: This discharge is comprised of 450,000 gallons per day of non-contact cooling water. There is no treatment required for this discharge.

RESOURCES USED TO DRAFT PERMIT

__ *Federal Effluent Limitation Guideline 40CFR_____*

__ *Performance Standards*

__ *Federal Development Document _____*

__ *Treatability Manual*

_X_ *Department File Information*

_X_ *Connecticut Water Quality Standards*

_X_ *Anti-degradation Policy*

__ *Coastal Management Consistency Review Form*

_X_ *Other – Explain (See General Comments)*

BASIS FOR LIMITATIONS, STANDARDS OR CONDITIONS

_X_ *Case by Case Determination using Best Professional Judgment (See Other Comments)*
Oil and grease, total (MIL); pH (MIL); total suspended solids (AML, MDL, MIL)

_X_ *In order to meet in-stream water quality (See General Comments)*
Chlorine (MIL), copper and lead (AML, MDL, MIL); aquatic toxicity (MDL, MIL); temperature (MIL)

AML: Average Monthly Limit *MDL: Maximum Daily Limit* *MIL: Maximum Instantaneous Limit*

GENERAL COMMENTS

The previous permit had the zone of influence for the discharge listed as 36,413 gph and the in-stream waste concentration as 31.4%. In this permit, these were changed to 22,646 gph and 42.4% respectively. The changes are based on USGS information and DEEP staff's mathematical calculations (see Appendix A).

The need for inclusion of water quality based discharge limitations in this permit was evaluated consistent with Connecticut Water Quality Standards and criteria, pursuant to 40 CFR 122.44(d). Each parameter was evaluated for consistency with the available aquatic life criteria (acute and chronic) and human health (fish consumption only) criteria, considering the zone of influence allocated to the facility where appropriate. The reasonable potential statistical procedures outlined in the EPA Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001) were employed to calculate the need for such limits. Comparison of monitoring data and its inherent variability with the calculated water quality based limits indicates a statistical probability of exceedance of such limits. Therefore, water quality based limits were included in this permit for total residual chlorine, copper and lead. Though these limits are lower than the limits in the previous permit, the Permittee is well able to comply with the limits. With the exceptions of lead data for November 30, 2011, that was 5µg/l, copper data for January 31, 2012, that was 6µg/l and total residual chlorine data that were 10µg/l in March and May 2012, all other data in the discharge monitoring report (DMR) from January 2010 – January 2015 are well below the proposed limits.

Implementation of the Antidegradation Policy follows a tiered approach pursuant to the federal regulations (40 CFR 131.12) and consistent with the Connecticut Antidegradation Policy included in the Connecticut Water Quality Standards (CTWQS). Tier 1 Antidegradation review applies to all permitted discharge activities to all waters of the state. Tiers 1 and 2 Antidegradation reviews apply to all new or increased discharges to high quality waters and wetlands, while Tiers 1 and 3 Antidegradation reviews apply to all new or increased discharges to outstanding national resource waters.

Although this is not a new permit, since the in-stream waste concentration was increased for this discharge, a Tier 1 Antidegradation Evaluation and Implementation Review was conducted to ensure that existing and designated uses of surface waters and the water quality necessary for their protection are maintained and preserved, consistent with CTWQS 2. All narrative and numeric water quality standards, criteria and associated policies contained in the CTWQS are the basis for the evaluation considering the discharge or activity both independently and in the context of other discharges and activities in the affected water body and considering any impairment listed pursuant to Section 303d for the Federal Clean Water Act or any TMDL established for the water body. The Department has determined that the discharge or activity is consistent with the maintenance, restoration, and protection of existing and designated uses assigned to the receiving water body by considering all relevant available data.

Lydall Brook is listed on the State's 305(b) list of impaired waters and the river is impaired for its designated uses of habitat for fish, other aquatic life and wildlife. The causes of impairment are unknown and a final total maximum daily load (TMDL) analysis has not been completed for the Lydall Brook (see Appendix B).

During a site inspection, the Department discovered that the sump pumps that are in the Permittee's well pit are piped to a nearby storm drain which discharges into Lydall Brook. The Permittee claims that there is usually no flow through these sump pumps when the well is operating during business hours and that groundwater is pumped only when the well is shut down which is typically during the weekends. The maximum flow from this sump was estimated to be about 4000 gallons per day when there is a discharge.

Since the sump pumps are part of the industrial water supply system for the Permittee's cooling activities, the discharge is associated with the production of the Permittee's water supply and therefore covered by the Water Treatment Wastewater General Permit. Under this general permit, the discharge of raw water such as this, is automatically covered and does not require submission of a registration form or fee. This discharge does not affect the allocated zone of influence in this permit because the discharge occurs mostly when the discharge covered under the NPDES discharge is not occurring.

OTHER COMMENTS

The sample type for zinc is listed as daily composite. This sample type was changed from grab that was in the previous permit, in order to obtain more representative sampling of the effluent over the period of the discharge. The Department also reevaluated the grab sampling for pH. The Permittee took six grab samples each, four hours apart, on 4/1/2013, 4/3/2013, 4/5/2013, 4/8/2013, 4/10/2013, 4/12/2013 and 4/15/2013. The pH of the forty-two (42) samples ranged from 7.20 to 8.23.

The result showed that the pH of the discharge is fairly consistent. A review of DMR data from January 2012 to May 2013 also revealed a pH range of 7.66 – 8.12. The Department concluded that the pH of a grab sample collected would be representative of the pH of the wastewater discharge. Therefore, the Permittee can continue to take grab samples for pH testing.

Based on a Case by Case Determination using the criteria of Best Professional Judgment, the limits for total suspended solids were set using section 22a-430-4(s)(2) of the Regulations of Connecticut State Agencies (RCSA) as a guide. Limits lower than the limits in section 22a-430-4(s)(2) of the RCSA were included for oil and grease based on historical data and consistent with the previous permit in accordance with the anti-backsliding rule of section 22a-430-4(l)(4)(A)(xxiii) of the RCSA. The limits are protective of the waters of the state. The maximum daily limit has been set equivalent to the maximum instantaneous limit. DEEP staff decided that since there is minimal effluent variability and the Permittee can comply with the limit, there is no need to make the maximum instantaneous limit less stringent.

The sampling frequencies for total residual chlorine, copper, flow, lead, pH, temperature, total suspended solids and zinc in the previous permit were bi-monthly. These were changed to quarterly in this permit because the analytical data for total residual chlorine, copper, lead, and zinc were mostly below detection from January 2010 to January 2015. The new sampling frequencies are consistent with the prescribed sampling frequency in section 22a-430-3(j)(2) of the RCSA.

The water used for non-contact cooling is provided by an on-site well. Therefore, section 316(b) of the Federal Water Pollution Control Act does not apply to this discharge.

Section 316(a) Determination

Section 316(a) of the Federal Water Pollution Control Act, U.S.C. § 1326(a) provides that the thermal component of any discharge will assure the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife in and on the receiving water body. Therefore, this permit has the following narrative temperature requirement based on the Connecticut water quality standards: "The temperature of any discharge shall not increase the temperature of the receiving stream above 85°F, or, in any case, raise the normal temperature of the receiving stream more than 4°F. The permit also includes quarterly temperature monitoring and a maximum instantaneous limit of 85°F, which is the water quality criterion for the receiving stream. A review of the DMR from January 2010 – January 2015 showed a maximum temperature of 70.8 °F. The DMR data indicate that the Permittee is well able to comply with the permit limit of 85°F. Therefore, there was no need to allocate a zone of influence for the thermal component of the wastewater discharge.

COMMENTS RECEIVED DURING THE PUBLIC NOTICE PERIOD AND THE DEPARTMENT'S RESPONSES

The public notice for the proposed permit for Sumitomo Bakelite North America Inc. was published in the Hartford Courant on August10, 2015. The Department has received no written comments on the proposed action.

APPENDIX A: WATER QUALITY BASED LIMITS CALCULATION

7Q10 OF THE RECEIVING STREAM

Section 22a-426-4(l) of the Regulations of Connecticut State states that "The Commissioner may, on a case-by-case basis, establish zones of influence when authorizing discharges to surface waters under sections 22a-430 and 22a-133(k) of the Connecticut General Statutes in order to allocate a portion of the receiving surface waters for mixing and assimilation of the discharge." The zone of influence for the receiving stream is calculated below:

$Cervione\ 7Q10 = 0.67A_{SD} + 0.01A_{till}\ (Cervione\ et\ al, 1982^{1})$

where A_{SD} *is the drainage area of the stratified drift and*

A_{till} *is the drainage area of the till covered bedrock*

$Drainage\ area = 3.25\ mi^2\ (USGS\ Connecticut\ Streamstats)$

$Drainage\ area\ of\ the\ stratified\ drift = 37.7\%\ of\ the\ drainage\ area\ (USGS\ Connecticut\ Streamstats)$

$Drainage\ area\ of\ the\ till\ covered\ bedrock = Drainage\ area - Drainage\ area\ of\ the\ stratified\ drift$

$Therefore,\ A_{SD} = 1.225\ mi^2 and\ A_{till} = 2.025\ mi^2$

$7Q10 = (0.67\ X\ 1.225) + (0.01\ X\ 2.025) = 0.841 cfs\ X\ 26{,}928\ (conversion\ factor) = 22646.45 \approx 22646 gph$

$ZOI = 22646\ gph\ X\ 24\ hours = 543{,}504\ gpd$

$$Dilution\ Factor = \frac{AML + ZOI}{AML} = \frac{400{,}000 + 543{,}504}{400{,}000} = 2.359$$

$$IWC = \frac{1}{DF}\ X\ 100\% = \frac{1}{2.359}\ X\ 100\% = 42.39\% \approx 42.4\%$$

[1]*Cervione, M. A., Jr., Melvin, R.L., and Cyr, K.A., 1982, A method for estimating the 7-day, 10-year low flow of streams in Connecticut: Connecticut Water Resources Bulletin 34, 12 p.*

DMR analytical data (January 2010 – January 2015)

Date/Pollutant	Chlorine (µg/l)	Copper (µg/l)	Lead (µg/l)	Zinc (µg/l)
1/31/2010	1.0*	3.0	1.0*	3.0
3/31/2010	1.0*	1.0*	1.0*	1.0*
5/31/2010	1.0*	1.0	1.0*	1.0*
7/31/2010	1.0*	4.0	1.0*	1.0*
9/30/2010	1.0*	4.0	1.0*	3.0
11/30/2010	1.0*	1.0*	1.0*	23.0
1/31/2011	1.0*	2.0	1.0*	5.0
3/31/2011	1.0*	2.0	1.0*	1.0*
5/31/2011	1.0*	1.0	1.0*	1.0*
7/31/2011	1.0*	2.0	1.0*	1.0*
9/30/2011	1.0*	2.0	1.0*	1.0*
11/30/2011	1.0*	1.0	5.0	1.0*
1/31/2012	1.0*	6.0	1.0*	8.0
3/31/2012	10.0	1.0*	1.0*	1.0*
5/31/2012	10.0	1.0*	1.0*	2.0
7/31/2012	1.0*	1.0*	1.0*	1.0*
9/30/2012	1.0*	1.0*	1.0*	1.0*
11/30/2012	1.0*	1.0*	1.0*	1.0*
1/31/2013	1.0*	1.0*	1.0*	1.0*
3/31/2013	1.0*	1.0*	1.0*	1.0*
5/31/2013	1.0*	1.0*	1.0*	1.0*
7/31/2013	1.0*	1.0*	1.0*	3.0
9/30/2013	1.0*	1.0*	1.0*	4.0
11/30/2013	1.0*	1.0*	1.0*	1.0*
1/31/2014	1.0*	6.0	1.0*	3.0
3/31/2014	1.0*	1.0*	1.0*	1.0*
5/31/2014	1.0*	1.0*	1.0*	1.0*
7/31/2014	1.0*	6.0	1.0*	7.0
9/30/2014	1.0*	1.0*	1.0*	5.0
11/30/2014	1.0*	1.0*	1.0*	7.0
1/31/2015	1.0*	1.0*	1.0*	3.0
$Cv = {}^{SD}/_{Mean}$	≈ 1.4	≈ 0.9	≈ 0.6	≈ 1.4

** Reported as below detection on the DMR, but substituted with the laboratory minimum detection levels for the purpose of reasonable potential determination.*

CONNECTICUT WATER QUALITY CRITERIA (FRESHWATER)			
	Aquatic Life		Human Health (µg/l)
	Acute (µg/l)	Chronic (µg/l)	
Chlorine	19	11	---
Copper	14.3	4.8	1300
Lead	30	1.2	15
Zinc	65	65	7400

AVERAGE OF THE LYDALL BROOK CONCENTRATION BASED ON DATA FROM SEPTEMBER 2005 TO JULY 2014 (µg/l)		
Total residual Chlorine	11.70	4 data from 9/1/10 and 9/3/10 were anomalies and were not used in the calculation
Copper, Total	3.48	3 data from 9/23/10, 9/24/10 and 9/3/10 were anomalies and were not used in the calculation
Lead, Total	1.37	2 data from 9/17/07 and 9/18/07 were anomalies and were not used in the calculation
Zinc, Total	8.98	6 data from 9/23/05, 9/24/05, 9/25/05, 8/25/06, 8/26/06 and 8/27/06 were anomalies and were not used in the calculation

REASONABLE POTENTIAL EVALUATION

(This analysis basically compares the projected maximum concentration in the effluent with the applicable water quality standard. When the projected maximum concentration is lower than the waste load allocation, this indicates that there is no potential for the discharge to exceed the water quality criterion. When the projected maximum concentration is higher than the waste load allocation, this indicates that there is potential for the discharge to exceed the water quality criterion and therefore limits are needed in the permit.)

WLA = Waste load allocation, $(QC)_d$ = Downstream data, $(QC)_u$ = Upstream data and Q_e = the discharge flow (refer to the ZOI calculation above for the downstream and effluent data)

	Maximum projected concentration in effluent = Maxumum measured concentration in effluent X multiplier in Table 3 – 1 below	$WLA_{acute} = \frac{(QC)_d - (QC)_u}{Q_e}$	$WLA_{chronic} = \frac{(QC)_d - (QC)_u}{Q_e}$	$WLA_{health} = \frac{(QC)_d - (QC)_u}{Q_e}$	Is there reasonable potential to exceed WQC?
Chlorine	10 X 4.8 = 48	28.92	10.05	---	Yes
Copper	6 X 3.2 = 19.2	29.00	6.59	4823.32	Yes
Lead	5 X 2.3 = 11.5	68.90	0.97	52.04	Yes
Zinc	23 X 4.8 = 110.4	141.12	141.12	27,485.24	No

Permit limits are not needed for zinc.

PERMIT LIMITS CALCULATION (Analysis is based on four samples per sampling month)					
LTA = Long term average, AML = Average monthly limit and MDL = Maximum daily limit					
	LTA_{acute} = WLA_{acute} X 99th percentile multiplier in the attached Table 5 – 1 (µg/l)	$LTA_{chronic}$ = $WLA_{chronic}$ X 99th percentile multiplier in the attached Table 5 – 1 (µg/l)	Governing LTA = lower of the LTAs	AML = LTA X 95th percentile multiplier in the attached Table 5 – 2 (µg/l)	MDL = LTA X 99th percentile multiplier in the attached Table 5 – 2 (µg/l)
Chlorine	28.92 X 0.153 = 4.42	10.05 X 0.281 = 2.82	chronic	2.82 X 2.31 = 6.51	2.82 X 6.56 = 18.50
Copper	29.00 X 0.224 = 6.50	6.59 X 0.404 = 2.66	chronic	2.66 X 1.85 = 4.92	2.66 X 4.46 = 11.86
Lead	68.90 X 0.321 = 22.12	0.97 X 0.527 = 0.51	chronic	0.51 X 1.55 = 0.79	0.51 X 3.11 = 1.59

Table 3-1. Reasonable Potential Multiplying Factors: 99% Confidence Level and 99% Probability Basis

Number of Samples	Coefficient of Variation																			
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
1	1.6	2.5	3.9	6.0	9.0	13.2	18.9	26.5	36.2	48.3	63.3	81.4	102.8	128.0	157.1	190.3	227.8	269.9	316.7	368.3
2	1.4	2.0	2.9	4.0	5.5	7.4	9.8	12.7	16.1	20.2	24.9	30.3	36.3	43.0	50.4	58.4	67.2	76.6	86.7	97.5
3	1.4	1.9	2.5	3.3	4.4	5.6	7.2	8.9	11.0	13.4	16.0	19.0	22.2	25.7	29.4	33.5	37.7	42.3	47.0	52.0
4	1.3	1.7	2.3	2.9	3.8	4.7	5.9	7.2	8.7	10.3	12.2	14.2	16.3	18.6	21.0	23.6	26.3	29.1	32.1	35.1
5	1.3	1.7	2.1	2.7	3.4	4.2	5.1	6.2	7.3	8.6	10.0	11.5	13.1	14.8	16.6	18.4	20.4	22.4	24.5	26.6
6	1.3	1.6	2.0	2.5	3.1	3.8	4.6	5.5	6.4	7.5	8.6	9.8	11.1	12.4	13.8	15.3	16.8	18.3	19.9	21.5
7	1.3	1.6	2.0	2.4	2.9	3.6	4.2	5.0	5.8	6.7	7.7	8.7	9.7	10.8	12.0	13.1	14.4	15.6	16.9	18.2
8	1.2	1.5	1.9	2.3	2.8	3.3	3.9	4.6	5.3	6.1	6.9	7.8	8.7	9.6	10.6	11.6	12.6	13.6	14.7	15.8
9	1.2	1.5	1.8	2.2	2.7	3.2	3.7	4.3	5.0	5.7	6.4	7.1	7.9	8.7	9.6	10.4	11.3	12.2	13.1	14.0
10	1.2	1.5	1.8	2.2	2.6	3.0	3.5	4.1	4.7	5.3	5.9	6.6	7.3	8.0	8.8	9.5	10.3	11.0	11.8	12.6
11	1.2	1.5	1.8	2.1	2.5	2.9	3.4	3.9	4.4	5.0	5.6	6.2	6.8	7.4	8.1	8.8	9.4	10.1	10.8	11.5
12	1.2	1.4	1.7	2.0	2.4	2.8	3.2	3.7	4.2	4.7	5.2	5.8	6.4	7.0	7.5	8.1	8.8	9.4	10.0	10.6
13	1.2	1.4	1.7	2.0	2.3	2.7	3.1	3.6	4.0	4.5	5.0	5.5	6.0	6.5	7.1	7.6	8.2	8.7	9.3	9.9
14	1.2	1.4	1.7	2.0	2.3	2.6	3.0	3.4	3.9	4.3	4.8	5.2	5.7	6.2	6.7	7.2	7.7	8.2	8.7	9.2
15	1.2	1.4	1.6	1.9	2.2	2.6	2.9	3.3	3.7	4.1	4.6	5.0	5.4	5.9	6.4	6.8	7.3	7.7	8.2	8.7
16	1.2	1.4	1.6	1.9	2.2	2.5	2.9	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.1	6.5	6.9	7.3	7.8	8.2
17	1.2	1.4	1.6	1.9	2.1	2.5	2.8	3.1	3.5	3.8	4.2	4.6	5.0	5.4	5.8	6.2	6.6	7.0	7.4	7.8
18	1.2	1.4	1.6	1.8	2.1	2.4	2.7	3.0	3.4	3.7	4.1	4.4	4.8	5.2	5.6	5.9	6.3	6.7	7.0	7.4
19	1.2	1.4	1.6	1.8	2.1	2.4	2.7	3.0	3.3	3.6	4.0	4.3	4.6	5.0	5.3	5.7	6.0	6.4	6.7	7.1
20	1.2	1.3	1.6	1.8	2.0	2.3	2.6	2.9	3.2	3.5	3.8	4.2	4.5	4.8	5.2	5.5	5.8	6.1	6.5	6.8

Table 5-1. Back Calculations of Long-Term Average

CV	WLA Multipliers $e^{[0.5\,\sigma^2 - z\,\sigma]}$	
	95th Percentile	99th Percentile
0.1	0.853	0.797
0.2	0.736	0.643
0.3	0.644	0.527
0.4	0.571	0.440
0.5	0.514	0.373
0.6	0.468	0.321
0.7	0.432	0.281
0.8	0.403	0.249
0.9	0.379	0.224
1.0	0.360	0.204
1.1	0.344	0.187
1.2	0.330	0.174
1.3	0.319	0.162
1.4	0.310	0.153
1.5	0.302	0.144
1.6	0.296	0.137
1.7	0.290	0.131
1.8	0.285	0.126
1.9	0.281	0.121
2.0	0.277	0.117

Acute

$$LTA_{a,c} = WLA_{a,c} \cdot e^{[0.5\,\sigma^2 - z\,\sigma]}$$

where $\sigma^2 = \ln[CV^2 + 1]$,
$z = 1.645$ for 95th percentile occurrence probability, and
$z = 2.326$ for 99th percentile occurrence probability

Chronic
(4-day average)

$$LTA_c = WLA_c \cdot e^{[0.5\,\sigma_4^2 - z\,\sigma_4]}$$

where $\sigma_4^2 = \ln[CV^2/4 + 1]$,
$z = 1.645$ for 95th percentile occurrence probability, and
$z = 2.326$ for 99th percentile occurrence probability

CV	WLA Multipliers $e^{[0.5\,\sigma_4^2 - z\,\sigma_4]}$	
	95th Percentile	99th Percentile
0.1	0.922	0.891
0.2	0.853	0.797
0.3	0.791	0.715
0.4	0.736	0.643
0.5	0.687	0.581
0.6	0.644	0.527
0.7	0.606	0.481
0.8	0.571	0.440
0.9	0.541	0.404
1.0	0.514	0.373
1.1	0.490	0.345
1.2	0.468	0.321
1.3	0.448	0.300
1.4	0.432	0.281
1.5	0.417	0.264
1.6	0.403	0.249
1.7	0.390	0.236
1.8	0.379	0.224
1.9	0.369	0.214
2.0	0.360	0.204

Table 5-2. Calculation of Permit Limits

CV	LTA multipliers $e^{[z\sigma - 0.5\sigma^2]}$	
	95th Percentile	99th Percentile
0.1	1.17	1.28
0.2	1.36	1.55
0.3	1.55	1.90
0.4	1.76	2.27
0.5	1.95	2.68
0.6	2.13	3.11
0.7	2.31	3.56
0.8	2.48	4.01
0.9	2.64	4.46
1.0	2.78	4.90
1.1	2.91	5.34
1.2	3.03	5.76
1.3	3.13	6.17
1.4	3.23	6.56
1.5	3.31	6.93
1.6	3.38	7.29
1.7	3.45	7.63
1.8	3.51	7.95
1.9	3.56	8.26
2.0	3.60	8.55

Maximum Daily Limit

$MDL = LTA * e^{[z\sigma - 0.5\sigma^2]}$

where $\sigma^2 = \ln[CV^2 + 1]$.
z = 1.645 for 95th percentile occurrence probability, and
z = 2.326 for 99th percentile occurrence probability

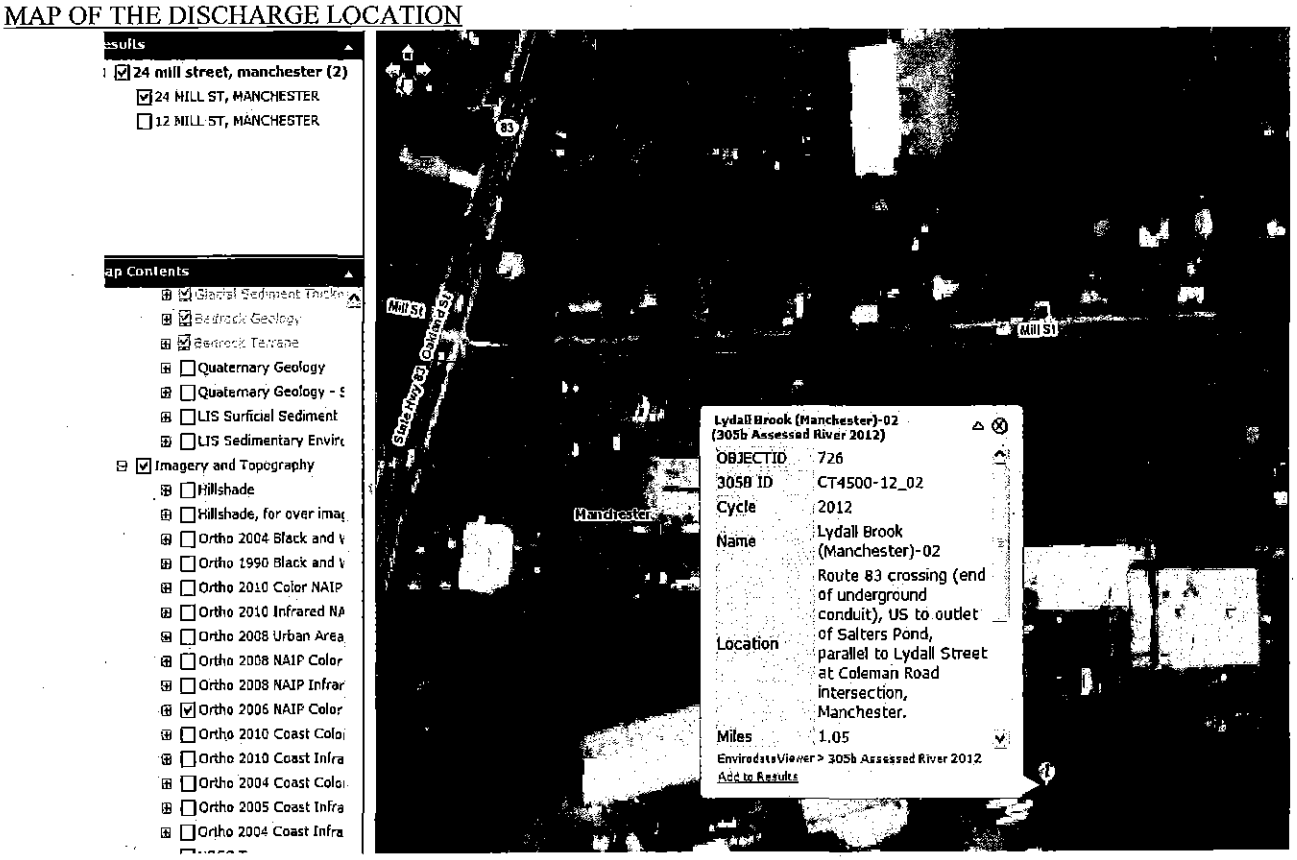
Average Monthly Limit

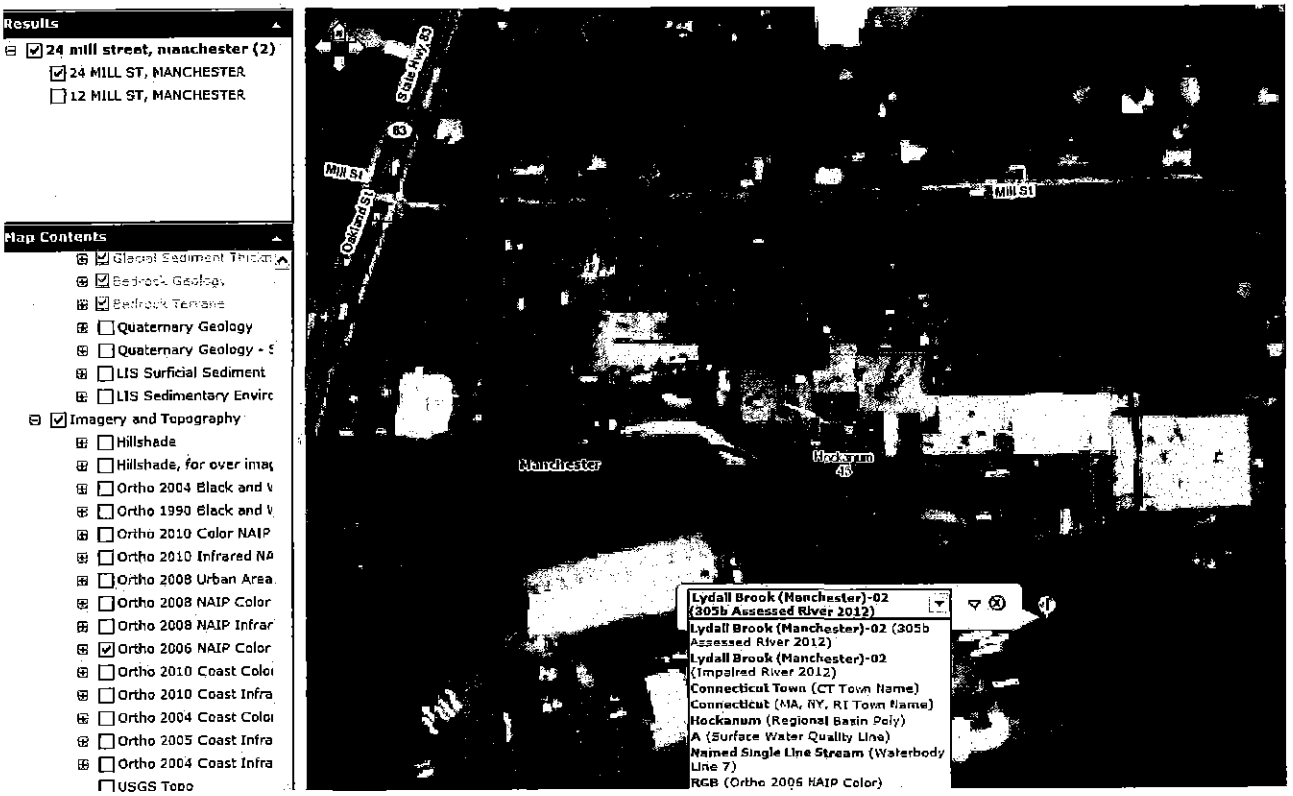
$AML = LTA * e^{[z\sigma_n - 0.5\sigma_n^2]}$

where $\sigma_n^2 = \ln[CV^2/n + 1]$.
z = 1.645 for 95th percentile,
z = 2.326 for 99th percentile, and
n = number of samples/month

CV	LTA Multipliers $e^{[z\sigma_n - 0.5\sigma_n^2]}$									
	95th Percentile					99th Percentile				
	n=1	n=2	n=4	n=10	n=30	n=1	n=2	n=4	n=10	n=30
0.1	1.17	1.12	1.08	1.06	1.03	1.25	1.18	1.12	1.08	1.04
0.2	1.36	1.25	1.17	1.12	1.08	1.55	1.37	1.26	1.16	1.09
0.3	1.55	1.38	1.26	1.18	1.09	1.90	1.59	1.40	1.24	1.13
0.4	1.76	1.52	1.36	1.25	1.12	2.27	1.83	1.55	1.33	1.18
0.5	1.95	1.66	1.45	1.31	1.16	2.68	2.09	1.72	1.42	1.23
0.6	2.13	1.80	1.55	1.38	1.19	3.11	2.37	1.90	1.52	1.28
0.7	2.31	1.94	1.65	1.45	1.22	3.56	2.66	2.08	1.62	1.33
0.8	2.48	2.07	1.75	1.52	1.26	4.01	2.96	2.27	1.73	1.39
0.9	2.64	2.20	1.85	1.59	1.29	4.46	3.28	2.48	1.84	1.44
1.0	2.78	2.33	1.95	1.66	1.33	4.90	3.59	2.68	1.96	1.50
1.1	2.91	2.45	2.04	1.73	1.36	5.34	3.91	2.90	2.07	1.56
1.2	3.03	2.56	2.13	1.80	1.39	5.76	4.23	3.11	2.19	1.62
1.3	3.13	2.67	2.23	1.87	1.43	6.17	4.55	3.34	2.32	1.68
1.4	3.23	2.77	2.31	1.94	1.47	6.56	4.86	3.58	2.45	1.74
1.5	3.31	2.86	2.40	2.00	1.50	6.93	5.17	3.78	2.58	1.80
1.6	3.38	2.95	2.48	2.07	1.54	7.29	5.47	4.01	2.71	1.87
1.7	3.45	3.03	2.56	2.14	1.57	7.63	5.77	4.23	2.84	1.93
1.8	3.51	3.10	2.64	2.20	1.61	7.95	6.06	4.46	2.98	2.00
1.9	3.56	3.17	2.71	2.27	1.64	8.26	6.34	4.68	3.12	2.07
2.0	3.60	3.23	2.78	2.33	1.68	8.55	6.61	4.90	3.26	2.14

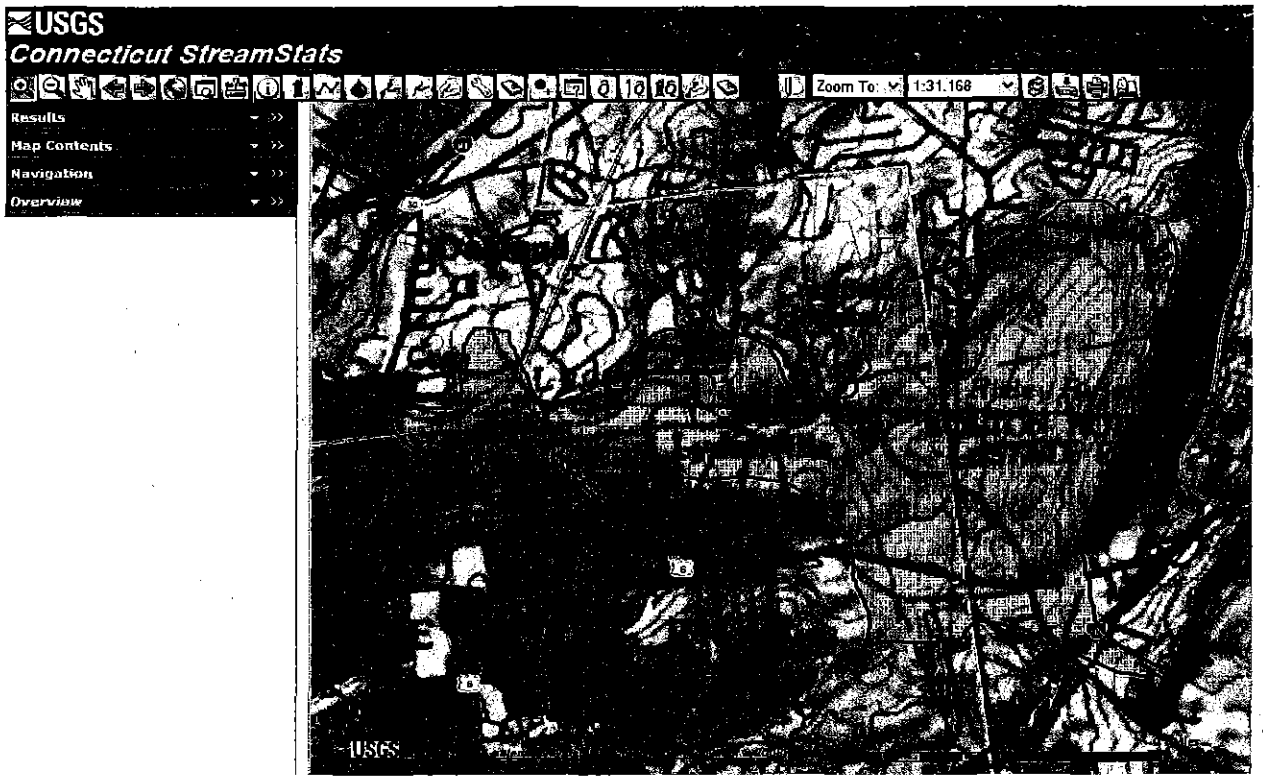
MAP OF THE DISCHARGE LOCATION

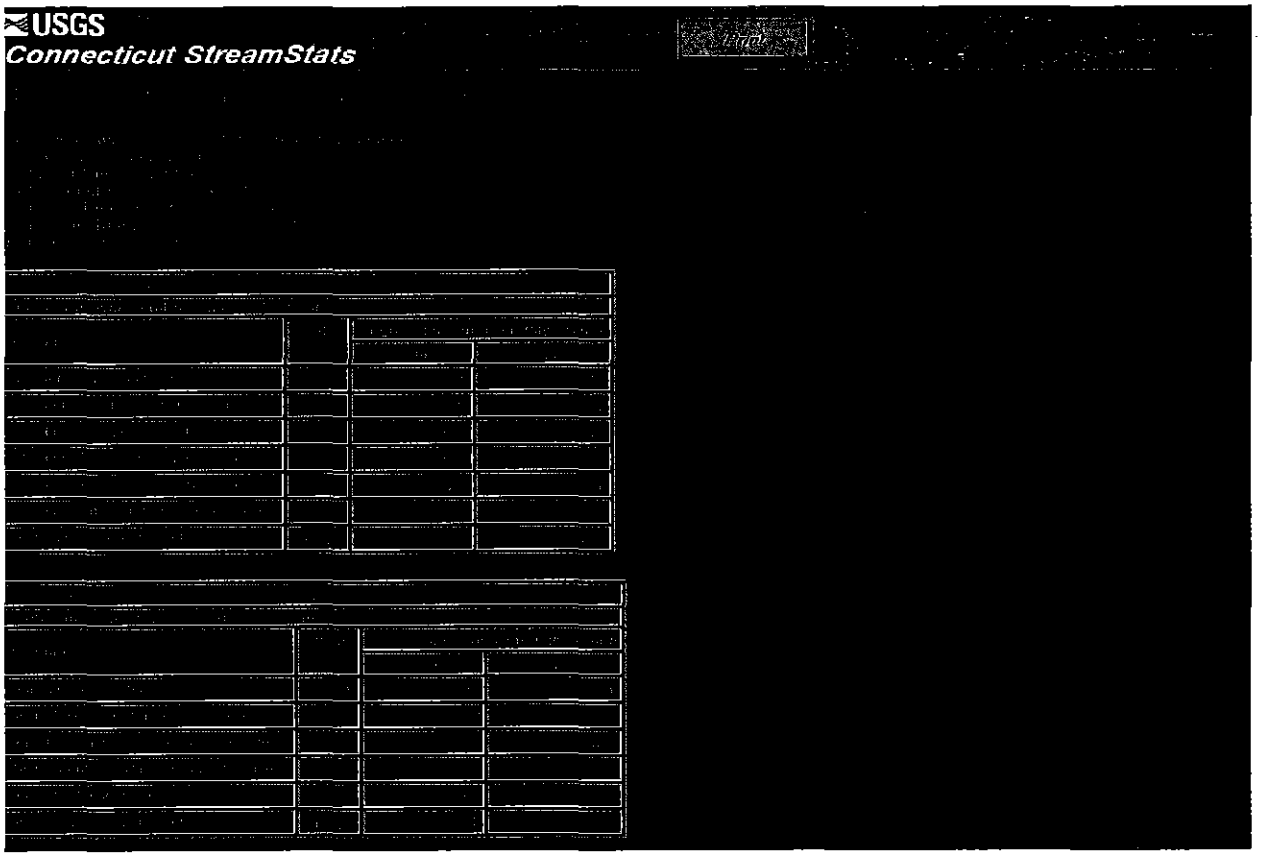




DRAINAGE AREA OF THE RECEIVING STREAM

The latitude and longitude of the discharge location are lat: N41° 47' 46", long: W72° 31' 09" (Based on the information in Attachment D of the permit renewal Application No. 201302970)





APPENDIX B

Table 3-4. Connecticut Impaired Waters List (EPA Category 5)

Waterbody Segment ID	Waterbody Name	Waterbody Type	Waterbody Size	Units	Impaired Designated Use	Cause	Comment
CT4500-00_06b	Hockanum River-06b	River	0.93	Miles	Habitat for Fish, Other Aquatic Life and Wildlife	Cause Unknown	Potential sources include industrial point source discharges, remediation sites, groundwater contamination.
CT4500-00_08	Hockanum river-08	River	0.59	Miles	Habitat for Fish, Other Aquatic Life and Wildlife	Cause Unknown	Potential sources include industrial point source discharges, remediation sites, groundwater contamination
CT4500-00-3-L3_01	Union Pond (Manchester)	Freshwater Lake	49.9	Acres	Fish Consumption	Chlordane	Potential sources include remediation sites, groundwater contamination
					Habitat for Fish, Other Aquatic Life and Wildlife	Excess Algal Growth	Potential sources include non-point sources, stormwater
						Nutrient/ Eutrophication Biological Indicators	Potential sources include non-point sources, stormwater
						Sedimentation/ Siltation	Potential sources include non-point sources, stormwater
CT4500-04_01	Ogden Brook (Vernon)-01	River	2.42	Miles	Habitat for Fish, Other Aquatic Life and Wildlife	Cause Unknown	Potential sources include landfill and illicit discharge
CT4500-12_02	Lydall Brook (Manchester)-02	River	1.05	Miles	Habitat for Fish, Other Aquatic Life and Wildlife	Cause Unknown	Potential sources include industrial point source discharge, illicit discharge
CT4503-00_01	Tankerhoosen River-01	River	1.51	Miles	Habitat for Fish, Other Aquatic Life and Wildlife	Cause Unknown	Potential sources include non-point source and illicit discharge
CT4504-00_01	South Fork Hockanum River (Manchester)-01	River	1.51	Miles	Habitat for Fish, Other Aquatic Life and Wildlife	Cause Unknown	Potential sources include industrial point source discharge, municipal discharges, landfills, illicit discharge, remediation sites, groundwater contamination

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