

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
NEW ENGLAND - REGION I  
ONE CONGRESS STREET, SUITE 1100  
BOSTON, MASSACHUSETTS 02114-2023

**FACT SHEET**

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

NPDES PERMIT NUMBER: **MA0001147**

NAME AND MAILING ADDRESS OF APPLICANT:

**Solutia, Inc.**  
**Indian Orchard Plant**  
**730 Worcester Street**  
**Springfield, MA 01151**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**Solutia, Inc.**  
**Indian Orchard Plant**  
**730 Worcester Street**  
**Springfield, MA 01151**

RECEIVING WATER(S): **Chicopee River and Bircham Bend Brook (MA36-24)**

RECEIVING WATER CLASSIFICATION(S): **B (warm water fishery)**

SIC CODE:           **3081 - Unsupported Plastic Film and Sheet**  
                          **2821 - Plastic Material and Resins**  
                          **2891 - Adhesives and Sealants**  
                          **2869 - Industrial Organic Chemicals, NEC**

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ATTACHMENT A: Site Locus Map

ATTACHMENT B: Summary of Discharge Monitoring Reports

ATTACHMENT C: Detailed Outfall Summary

ATTACHMENT D: Outfall Locus Map

ATTACHMENT E: Temperature Calculations

**I. Proposed Action, Type of Facility, and Discharge Location**

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) for re-issuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge into the designated receiving waters. The existing permit was issued on September 18, 1987 and became effective after an appeal process on October 26, 1993. The permit was modified on November 3, 1993 and subsequently expired on October 26, 1998 (see Permit History below). EPA received a completed permit renewal application from Solutia on June 22, 1998. Since the permit renewal application was deemed timely and complete by EPA, the permit has been administratively continued.

Solutia's Indian Orchard Plant, which is located in Chicopee, Massachusetts, produces plastic sheet interlayer for automobile windshields and architectural glass, resins for surface coating applications, resins for aqueous coatings, solutions and emulsions for use as pressure sensitive adhesives, ethyl acetate, and R & D operations. The facility discharges non-contact cooling water and storm water to the Chicopee River and Bircham Bend Brook. For a location of the facility refer to Attachment A. In the future this facility may be eligible to apply for the Non-Contact Cooling Water (NCCW) General Permit and Storm Water Multi-Sector General Permit.

**Permit History**

Permit Expired October 26, 1998

Application Received June 22, 1998

Permit Transferred from Monsanto Company to Solutia, Inc. December 19, 1997

Permit Modification Issued November 3, 1993

Permit Effective after Appeal Process October 26, 1993

Permit Issued to Monsanto Company September 18, 1987

**II. Description of Discharge**

A quantitative description of the effluent parameters based on recent discharge monitoring reports (DMRs) is shown on Attachment B of this fact sheet. A list of the discharge outfalls and type of discharges is included in Attachment C.

**III. Receiving Water Description**

The facility discharges to Chicopee River and Bircham Bend Brook (MA36-24), which are part of the Chicopee River watershed. These waterbodies are classified as Class B warm water fisheries by the Massachusetts Surface Water Quality Standards [314 CMR 4.05(3)(b)]. The Massachusetts Surface Water Quality Standards, 314 Code of Massachusetts Regulations ("CMR") 4.05(4) (b) state that Class B waters have the following designated uses: *These waters are designated as a habitat for fish, other aquatic life and wildlife, and suitable for primary and secondary contact recreation. These waters shall have consistently good aesthetic value. Where designated, they shall be suitable as a source of public water supply with appropriate treatment.*

Section 303 (d) of the CWA requires states to identify those water bodies that are not expected to meet water quality standards after the implementation of technology based controls and, as such require the development of total maximum daily loads (TMDL). The Proposed Massachusetts Year 2006 List of Integrated Waters (CWA Sections 303(d) and 205 (b)) report states that the Chicopee River (MA36-24), from the Wilbraham Pumping Station to Chicopee Falls, is not attaining water quality standards because of pathogens.

MassDEP is required under the CWA to develop a Total Maximum Daily Load (TMDL) for a water body once it is identified as impaired. A TMDL is essentially a pollution budget designed to restore the health of a water body. A TMDL first identifies the source(s) of the pollutant from direct and indirect discharges in order to next determine the maximum amount of pollutant (including a margin of safety) that can be discharged to a specific water body while maintaining water quality standards for designated uses. It then outlines a plan to meet the goal.

A TMDL has not yet been developed for the Chicopee River. In the interim, EPA is developing the conditions for this permit based on a combination of technology based standards, water quality based standards, and anti-degradation provisions. Based on the nature of the discharges for the Solutia Facility, they are not expected to contribute to the existing impairments due to pathogens. However, if a TMDL developed in the future identifies that the discharge from the facility is causing or contributing to the non-attainment of surface water quality criteria, the permit may be re-opened.

#### **IV. Limitations and Conditions**

The effluent limitations of the draft permit, the monitoring requirements, and any implementation schedule (if required) may be found in the draft permit.

#### **V. Permit Basis: Statutory and Regulatory Authority**

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. This Draft NPDES 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.

**A. 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 Best Professional Judgement (BPJ), for 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 are established and in no case later than March 31, 1989 [See 40 CFR §125.3(a)(2)]. Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA can not be authorized by a NPDES permit.

On November 5, 1987 EPA promulgated effluent limit guidelines (ELGs) for Organic Chemicals, Plastics, and Synthetic Fibers at 40 CFR §414. These ELGs are applicable to "... process wastewater discharges from all establishments or portions of establishments that manufacture the organic chemicals, plastics, and synthetic fibers (OCPSF) products or product groups covered by subparts B through H of this regulation and are included within the following U.S. Department of Commerce Bureau of the Census Standard Industrial Classification (SIC) major groups: (1) SIC 2821—Plastic Materials, Synthetic Resins, and Nonvulcanizable Elastomers, (2) SIC 2823—Cellulosic Man-Made Fibers, (3) SIC 2824—Synthetic Organic Fibers, Except Cellulosic, (4) SIC 2865—Cyclic Crudes and Intermediates, Dyes, and Organic Pigments, and (5) SIC 2869—Industrial Organic Chemicals, Not Elsewhere Classified." Solutia does not currently discharge process wastewater streams covered by these subparts and subsequently these ELGs do not apply to Solutia. In the absence of applicable technology-based effluent guidelines, the permit writer is authorized under Section 402(a)(1)(B) of the CWA to establish effluent limitations on a case-by-case basis using Best Professional Judgement (BPJ).

**B. 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 has a similar narrative criteria in their water quality regulations that prohibits such discharges [See Massachusetts 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.

### **C. 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 antibacksliding provisions can only be granted under one of the defined exceptions [See 40 CFR §122.44(l)(i)].

### **D. Anti-Degradation**

The Massachusetts Anti-Degradation Policy is found at Title 314 CMR 4.04. All existing uses of the Chicopee River must be protected. The EPA anticipates that the MassDEP shall make a determination that there shall be no significant adverse impacts to the receiving waters and no loss of existing uses as a result of the discharge authorized by this permit. This Draft Permit is being reissued with allowable effluent limits as stringent as or more stringent than the Current Permit and accordingly will continue to protect the existing uses of the Chicopee River and Bircham Bend Brook.

## **VI. Explanation of the Permit's Effluent Limitation(s)**

### **A. Facility Information**

Solutia's Indian Orchard Plant, which is located in Springfield, Massachusetts, is a chemical manufacturing facility. The Indian Orchard Plant conducts research and development operations and produces Saflex® polyvinyl butyral (PVB) plastic sheet interlayer for automobile windshields and architectural glass, Resimene® melamine-formaldehyde resins for surface coating applications, Butvar® polyvinyl butyral (PVB) resins for Saflex® and Butvar® Dispersions (BR) aqueous coatings.

In addition to Solutia's research development and production operations, several companies conduct guest operations with Solutia, lease land on Solutia property, or have bought land from the Solutia facility. Cytec Industries, Inc. and INEOS are two chemical companies that own on-site plants run by Solutia employees. Seven acres on the site are leased to MassPower, which runs a cogeneration facility that utilizes non-contact cooling water produced by Solutia. The

northwest area of the facility, and the associated outfalls, was sold to and is still owned by Nova Chemicals Inc.. In addition, the former Bayer facility, located next to the southern portion of Solutia, was sold to Voith Paper Finishing, Inc. in February 2001. According to the permittee, the storm water catch basins on the former Bayer facility that connected to Outfall 017 were cut and plugged, and a retention area was created to handle storm water runoff. The storm water runoff from this area is not covered by this NPDES permit.

Solutia, Inc. discharges non-contact cooling water (NCCW) and storm water. Non-contact cooling water comes from three boilers used by Solutia and the cogeneration facility run by MassPower. None of these discharges contain biocides or other chemical additives. Aside from NCCW, process wastewater is treated for pH and discharged to the city sewer for treatment at Springfield Regional Waste Water Treatment Facility at Bondi Island. Approximately 1-2 MGD of Solutia's non-contact cooling water is used by MassPower for boiler feed and cooling tower water makeup. Masspower discharges 0.2 – 0.27 MGD of water back to Solutia where it is pretreated along with process wastewater prior to discharge to the sewer. Any spills of organic matter are cleaned using absorbent materials that are disposed of as solid waste or go to the sewer. All manholes on the site are designated as process wastewater (painted red) destined for the city sewer or storm water (painted white) destined for the river.

Solutia, Inc. is also the site of a Massachusetts Chapter 21E investigation where extensive environmental monitoring has been conducted on the groundwater, surface water, and soil. Groundwater samples indicate the presence of chlorobenzene and vinyl chloride. To address these issues, active site remediation is occurring at the Northeast portion of the site near the Nova Chemicals facility. Sodium permanganate is being added to the groundwater in order to oxidize residues and, according to the facility, there is no surface water discharge associated with the on-going remediation activity.

## **B. Permitted Outfalls**

Solutia has a total of ten outfalls included in the Draft Permit. Two outfalls are used for the discharge of both non-contact cooling water and storm water, while the remaining eight outfalls are dedicated to storm water discharge only. Outfalls 009, 017, 10S, 51S, 14S, 61S, 15S, and 19S discharge to the Chicopee River. Outfalls 20S and 21S discharge to Bircham Bend Brook. Attachment C summarizes the active and non-active outfalls at Solutia.

The two main outfalls for the facility are Outfall 009 and Outfall 017. Outfall 009 discharges non-contact cooling water from the chiller system for the telephone and central computer facility, air conditioning condensate in Building 11, and storm water from a one-acre portion of the facility. Storm water includes drainage from Building 1, which is now owned by NOVA Chemicals. Effluent monitoring samples are collected at the discharge point to the river. Based on the unsafe conditions associated with access to the sampling location via steep slopes, sampling is not required during the winter months. Flow is estimated based on measurements at a v-notch weir.

Outfall 017 discharges non-contact cooling water from the Resimine® and Butvar® processes in Buildings 81 and 92. The source of this water is the Springfield Municipal Water Supply. The storm drains leading to this outfall drain 83.6 acres of the site, including storm water from the

MassPower area.

Outfalls 10S, 51S, 14S, 61S, 15S, and 19S, listed in order from upstream to downstream, collect storm water from 7 acres in the areas towards the river bank, and discharge to the Chicopee River. These areas are almost entirely impervious, and include the Cytex Industries research building and various recreational areas. According to the facility, these outfalls discharge similar wastewater based on the comparable nature of the drainage areas and the activities that occur in those areas. The EPA Multi-Sector General Permit (MSGP) for Storm Water Discharges Associated with Industrial Activity allows sampling at a representative outfall when a facility has two or more outfalls that are believed to discharge substantially similar effluent. Consistent with this approach, the Draft Permit contains a provision which allows the permittee to develop a rotating quarterly sampling schedule in place of sampling each of the above outfalls for each monitoring period. The schedule must ensure that at least one outfall is sampled each monitoring period, that each WET test is conducted on a different outfall, and that each outfall is sampled at least twice within the five year permit cycle, with the rotation repeating thereafter (see Part V.C.9. of this Fact Sheet for additional requirements).

Outfalls 20S and 21S discharge to Bircham Bend Brook on the southwestern portion of the site. The drainage areas include the Saflex (SIC code 3081) and South Butvar (SIC code 2821) buildings. The permittee's application describes a discernable dry weather flow, which the facility traced back to ground water infiltration in the Saflex Building (Building 99) area. A priority pollutant scan was conducted by the facility and results showed pollutant concentrations (including vinyl chloride and chlorobenzene) to be below the detection limit. This flow discharges through Outfall 21S.

There are several outfalls mentioned in previous permits that are not included in this Draft Permit. Outfalls 003, 004, 006, and 007 were transferred to Nova Chemicals, Inc. in December 1996. Outfalls 004W, 006W, 009, 018 are no longer in service. These cooling tower overflow and non-contact cooling water outfalls were taken out of service when the cooling towers were dismantled in April 1998. The connections were cut and plugged to permanently disconnect them from plant piping. A final outfall, Outfall 010, previously discharged wastewater from a cooling tower. This tower was torn down in 1987 and the outfall now discharges only storm water and is designated 10S.

### **C. Derivation of Effluent Limits under the Federal CWA and/or the Commonwealth of Massachusetts Surface Water Quality Standards**

#### 1. Flow

The Draft Permit contains a monthly average flow limit of 4.0 MGD and a maximum daily flow limit of 6.0 MGD for Outfall 017. These limits are continued from the Existing Permit. The flow limits for outfall 009 are 0.2 MGD average monthly and 0.5 MGD maximum daily. These limits are based on the actual water usage as reported by the facility. Taking into account the flow from both Outfall 009 and Outfall 017, Solutia has a dilution factor of approximately 13.7 with the receiving water (Attachment E).

Based on the performance of the facility, the monitoring frequency for Outfall 017 has been decreased from three (3) times per month in the Existing Permit to once (1) per month in the Draft Permit. Outfall 009 will be sampled once (1) per month except in the winter months (December – February, inclusive) when monitoring is not required. This frequency is continued from the Existing Permit and is based on the unsafe conditions, especially during the winter months, associated with collecting samples at these outfalls.

## 2. Temperature

The instream temperature requirements in the Massachusetts Surface Water Quality Standards for Class B warm water fisheries require that the temperature shall not exceed 83°F in warm water fisheries, that the rise in temperature due to a discharge shall not exceed 5°F in rivers and streams designated as warm water fisheries (based on the minimum expected flow for the month); and that the natural seasonal and daily variation shall be maintained. There shall be no change from background conditions that would impair any use designated to this class [314 CMR 4.05 (3)(b)]. Massachusetts Water Quality Standards do allow for the calculation of a mixing zone, which is limited to an area or volume as small as feasible, for the initial dilution of a discharge [314 CMR 4.03 (2)].

The Draft Permit contains a daily maximum temperature limit of 83°F for Outfall 009 and a daily maximum temperature limit of 85°F for Outfall 017. These limits have been decreased from 90°F in the Existing Permit and, based on past records (Attachment B), are readily attainable with a minimal mixing zone. Taking into account the dilution factor of 13.7, the combined effects of the temperature limits for Outfall 009 and Outfall 017 will result in an estimated temperature increase of approximately 0.35°F in the summer and 3.27°F in the winter (Attachment E). Based on these calculations, the temperature limits contained in the Draft Permit meet the Class B Massachusetts Surface Water Quality Standards.

The Existing Permit also contained a temperature limit of 90°F for Outfalls 10 (now designated as 10S), 14, and 15. These outfalls no longer discharge non-contact cooling water and thus this limit has been removed from the Draft Permit. This is considered a substantial alteration and thus removal of the permit limit is in accordance with the anti-backsliding exception defined at 40 CFR §122.44(l)(i)(A).

## 3. pH

Massachusetts Surface Water Quality Standards require the pH of Class B waters to be within the range of 6.5 to 8.3 standard units (s.u.) [314 CMR 4.05(3)(b)]. The Draft Permit identifies a pH permit limit range of 6.5 to 8.3 for all outfalls, which has been established in accordance with the State Surface Water Quality Standards. The discharge shall not exceed this pH range unless due to natural causes. In addition, there shall be no change from background conditions that would impair any uses assigned to the receiving water class.

Solutia has requested a change in the pH range in the Draft Permit based on the pH of source water used for non-contact cooling. A change in the pH range in the Draft Permit due to in-stream dilution could be considered if the applicant can demonstrate, to the satisfaction of

MassDEP and EPA, that the in-stream Massachusetts Standards for pH would be protected. Upon satisfactory completion of a demonstration study, the applicant or MassDEP may request in writing that the permit limits be modified by EPA-New England to incorporate the results of the demonstration.

Anticipating the situation where MassDEP grants a formal approval changing the pH limit(s) to outside the 6.5 to 8.3 Standard Units (S.U.), EPA-New England has added a provision to the Draft Permit. That provision will allow EPA-New England to adjust the pH limit(s) using a certified letter approach (See **SPECIAL CONDITIONS** section of the Draft Permit).

If the EPA and the State approve results from a pH demonstration study, it is anticipated that this permit's pH limit range can be relaxed in accordance with 40 CFR §122.44(l)(2)(i)(B) because it will be based on new information not available at the time of this permit's issuance. This new information includes results from the pH demonstration study that justifies the application of a less stringent effluent limitation. EPA-New England anticipates that the limit determined from the demonstration study as approved by the MassDEP will satisfy all effluent requirements for this discharge category and will comply with Massachusetts Standards with regard to instream conditions.

#### 4. Total Residual Chlorine (TRC)

The source of the non-contact cooling water at Solutia is the Springfield municipal water supply and therefore, total residual chlorine may be found in the discharge. Based on this possibility, the Draft Permit requires both Outfall 009 and Outfall 017 to monitor for total residual chlorine at the frequency of once (1) per month.

#### 5. Total Suspended Solids

The Draft Permit contains wet weather monitoring for total suspended solids at all outfalls. This requirement is based on a consideration of Sector C (Chemical and Allied Manufacturing) and Sector Y (Rubber, Miscellaneous Plastic Products and Miscellaneous Manufacturing Industries) of the NPDES Storm Water Multi-Sector General Permit (MSGP) for Industrial Activities. These sectors apply to the facility and contain monitoring requirements for total suspended solids with a benchmark monitoring cutoff concentration of 100 mg/l. This concentration is not an effluent limitation but rather the level an indication of the successfulness of the facility Storm Water Pollution Prevention Plan (SWPPP – see Part VI.C.9.). Concentrations that exceed the benchmark monitoring cutoff concentration indicate a need for careful review of the SWPPP to ensure that appropriate best management practices (BMPs) are being implemented.

#### 6. Total Recoverable Zinc

The Draft Permit contains wet weather monitoring requirements for total recoverable zinc at all outfalls. These monitoring requirements are based on Sector C (Chemical and Allied Manufacturing) of the Draft MSGP. Sector C contains monitoring requirements and a benchmark monitoring cutoff concentration of 0.12 mg/l for zinc. This concentration is not an effluent limitation but rather the level an indication of the successfulness of the facility Storm

Water Pollution Prevention Plan (SWPPP – see Part VI.C.9.). Concentrations that exceed the benchmark monitoring cutoff concentration indicate a need for careful review of the SWPPP to ensure that appropriate best management practices (BMPs) are being implemented. These requirements apply to industrial activities represented by SIC Code 2821 – Plastics Material and Resins.

### 7. Whole Effluent Toxicity

Whole Effluent Toxicity (WET) testing is conducted to determine whether certain effluents, often containing potentially toxic pollutants, are discharged in a combination which produces a toxic amount of pollutants in the receiving water. Therefore, toxicity testing is being used in conjunction with pollutant-specific control procedures to minimize the discharge of toxic pollutants.

Two sources of legal authority 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. 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) state, "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 this effluent is such that toxicity testing is required to evaluate and address any water quality impacts. The MassDEP in its "Implementation Policy for the Control of Toxic Pollutants in Surface Waters" (February 23, 1990) sets forth toxicity limits according to dilution factors based on perceived risk. Results of these toxicity tests will demonstrate compliance with the Massachusetts Water Quality Standards.

The Draft Permit requires that the permittee conduct acute WET testing at outfalls 009, 017, 20S, and 21S once (1) per year in May. Testing for outfalls 10S, 51S, 14S, 61S, 15S, and 19S shall be conducted on a rotating basis such that, at the end of five years, five WET tests have been completed and no outfall has been sampled for WET testing twice. Each test must include the daphnid, *Ceriodaphnia dubia*, and fathead minnow, *Pimephales promelas*, in accordance with EPA Region I protocol to be found in permit **Attachment A**, Freshwater Acute Toxicity Test Procedure and Protocol.

After two satisfactory toxicity tests, the permittee may submit to EPA and MassDEP a written request for a permit modification of its toxicity testing requirements. EPA and MassDEP will review the results of the toxicity tests and determine if further testing is required. The permittee is required to continue testing as specified in the permit until the permit is either formally

modified or until the permittee receives a certified letter from EPA indicating a change in the permit conditions.

#### 8. Priority Pollutant Scan

The annual priority pollutant scan requirement has been discontinued in the Draft Permit. The concentrations for the majority of pollutants in the scan have been below the detection limit. Based on these monitoring results, the concentration of pollutants are not at levels that result in a reasonable potential for violation of the water quality standards.

#### 9. Storm Water Pollution Prevention Plan (SWPPP)

This facility engages in activities which could result in the discharge of pollutants to waters of the United States either directly or indirectly through storm water runoff. These operations include at least one of the following in an area potentially exposed to precipitation or storm water: material storage, in-facility transfer, material processing, material handling, or loading and unloading. To control the activities/operations, which could contribute pollutants to waters of the United States, potentially violating the State's Water Quality Standards, the Draft Permit requires the facility to develop, implement, and maintain a Storm Water Pollution Prevention Plan (SWPPP) containing best management practices (BMPs) appropriate for this specific facility (See Sections 304(e) and 402(a)(1) of the CWA and 40 CFR §125.103(b)). Specifically, at this facility, chemical storage, processing, and handling are examples of operations that shall continue to be included in the SWPPP.

The goal of the SWPPP is to reduce, or prevent, the discharge of pollutants through the storm water system. The SWPPP requirements in the Draft Permit are intended to provide a systematic approach by which the permittee shall at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit. The SWPPP shall be prepared in accordance with good engineering practices and identify potential sources of pollutants, which may reasonably be expected to affect the quality of storm water discharges associated with industrial activity from the facility. The SWPPP, upon implementation, becomes a supporting element to any numerical effluent limitations in the Draft Permit. Consequently, the SWPPP is as equally enforceable as the numerical limits.

This process involves the following four main steps:

- (1) Forming a team of qualified facility personnel who will be responsible for developing and updating the SWPPP and assisting the plant manager in its implementation;
- (2) Assessing the potential storm water pollution sources;
- (3) Selecting and implementing appropriate management practices and controls for these potential pollution sources; and
- (4) Reevaluating, periodically, the effectiveness of the SWPPP in preventing storm water contamination and in complying with the various terms and conditions of the Draft Permit.

EPA's NPDES Storm Water Multi-Sector General Permit for Industrial Activities (MSGP), issued by EPA on October 30, 2000 includes BMP and SWPPP requirements for both Chemical and Allied Manufacturing (Sector C) and Rubber, Miscellaneous Plastic Products and Miscellaneous Manufacturing Industries (Sector Y). Therefore, the permittee is encouraged to review both SWPPP plans and incorporate those requirements, to the degree practicable, into the amended SWPPP. These can be found in the Federal Register, Vol. 65, pgs 64820-64821 for Sector C and 64848-64849 for Sector Y.

The EPA Multi-Sector General Permit (MSGP) for Storm Water Discharges Associated with Industrial Activity allows sampling at a representative outfall when a facility has two or more outfalls that are believed to discharge substantially similar effluent. If the permittee chooses to collect samples from a representative outfall, the SWPPP must describe the locations of the outfalls, why they are expected to discharge substantially identical effluents, estimates of the size of the drainage areas (in square feet), and estimates of the runoff coefficient of the drainage areas (low: under 40 percent; medium: 40 to 65 percent; high: above 65 percent) [see 65 FR 64818].

## **VII. Essential Fish Habitat**

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. Sect. 1801 et seq. (1998)), EPA is required to consult with the National Marine Fisheries Service (NMFS) if EPA's action or proposed actions that it funds, permits or undertakes, "may adversely impact any essential fish habitat." 16 U.S.C. Sect. 1855(b). The Amendments broadly define "essential fish habitat" (EFH) as "waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." 16 U.S.C. Sect. 1802(10). Adverse impact means any impact which reduces the quality and/or quantity of EFH. 50 CFR Sect. 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative or synergistic consequences of actions.

Essential Fish Habitat is only designated for fish species for which federal Fisheries Management Plans exist. 16 U.S.C. Sect. 1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

EPA's review of available EFH information indicates that the riverine system to which the facility discharges is not designated EFH for any federally managed species. Thus EPA has determined that EFH consultation with NMFS is not required. If adverse impacts are detected as a result of this permit action, NMFS will be notified and an EFH consultation will promptly be initiated. A copy of the Draft Permit has been provided to the NMFS for review and comment.

## **VIII. 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) administers Section 7 consultations for freshwater species. The National Marine Fisheries Service (NMFS) administers Section 7 consultations for marine species and anadromous fish.

### Proposed Action

The applicant is proposing to discharge non-contact cooling water and storm water to the Chicopee River and Bircham Bend Brook. The facility produces plastic sheet interlayer for automobile windshields and architectural glass, resins for surface coating applications, resins for aqueous coatings, solutions and emulsions for use as pressure sensitive adhesives, ethyl acetate, and R & D operations. The source of the non-contact cooling water is the Springfield Municipal Water Supply. A complete discussion of the manufacturing activities at this facility can be found in Section VI.A. of this Fact Sheet.

The permitted outfalls at the facility are located along the bank at or near the surface of the water body. The discharge location is approximately 6 miles from the confluence of the Chicopee and Connecticut Rivers. The Chicopee River meets the Connecticut River approximately 6 river miles downstream of the Holyoke Dam. The average flow of the Chicopee River is approximately 581.6 million gallons per day (MGD) and the average flow of the Connecticut River just upstream of the Chicopee River is approximately 10,000 MGD. A conservative low flow value for the Chicopee River, in this case the 7Q10 value, is 82.7 MGD. The 7Q10 value is the annual minimum flow for seven consecutive days with a recurrence interval of ten years.

### Protected Species within the Project Area

EPA has made the preliminary determination that the only endangered species potentially influenced by the reissuance of this permit is the shortnose sturgeon (*Acipenser brevirostrum*). Although the dwarf wedge mussel (*Alasmidonta heterodon*) does occur in the Connecticut River System, it has not been found in the vicinity of the facility. The bald eagle (*Haliaeetus leucocephalus*) does occur in the vicinity of the facility; however, this species has been removed from the Federal list of Threatened and Endangered Wildlife.

The information on shortnose sturgeon presented below was taken primarily from the Draft Endangered Species Act Section 7 Consultation Biological Opinion (BO) for the Holyoke Hydroelectric Project (Federal Energy Regulatory Commission (FERC) Permit #2004), issued to FERC by NOAA Fisheries on September 1, 2004. Additional information was taken from the NMFS Protected Resource Division (PRD) August 9, 2007 letter to EPA.

A general profile of the life history of the species follows. Spawning of this anadromous species occurs over channel habitats containing gravel, rubble, or rock-cobble substrates (Dadswell et al. 1984; NOAA Fisheries 1998). Eggs become adhesive soon after fertilization and are not thought to drift high into the water column. Once hatched, the larvae are photonegative, remaining on the bottom for several days. Buckley and Kynard (1981) found week old larvae to be

photonegative and form aggregations with other larvae in concealment. Young-of-the-year shortnose sturgeon are believed to move downstream after hatching (Dovel 1981) but remain within freshwater habitats. Juveniles generally move upstream in spring and summer and move back downstream in fall and winter. Shortnose sturgeon typically occur in the deepest parts of rivers or estuaries where suitable oxygen and salinity values are present (Gilbert 1989).

Historically, a single population of shortnose sturgeon was believed to occur in the Connecticut River. The construction of the Holyoke Dam has effectively split this protected species into two populations. Spawning is thought to occur only in the population upstream of the dam. It is the successful downstream migration of these fish past the Holyoke Dam that maintains the downstream population.

No shortnose sturgeon spawning activity is thought to occur in the Chicopee River. EPA recognizes that a concentration area of shortnose sturgeon is located in Agawam in the Connecticut River. This part of the river is thought to provide summer feeding and overwintering habitat for the species. This area is approximately 5.5 miles downstream of the confluence of the Chicopee and Connecticut Rivers, and a total of approximately 11.5 river miles downstream from the facility discharge location. While no part of the Chicopee River has been characterized as a concentration area for shortnose sturgeon, these fish have been documented in the Chicopee River. Any shortnose sturgeon found in the Chicopee River will likely be moving past the facility as they forage for food. Information for the species in the Connecticut River indicates that the sturgeon will travel in the deeper, channelized portion of the river, and would not be expected to enter Bircham Bend Brook or come in direct contact with the near-bank surface discharge from the facility.

#### Potential Impacts to Shortnose Sturgeon from Facility Operation

- 1. Impingement Impacts:* The Solutia Facility uses the Springfield Municipal Water Supply to obtain cooling water. The facility has no intake structure on the Chicopee River. Therefore, potential adverse effects to shortnose sturgeon adults from impingement are not possible.
- 2. Direct Contact with the Effluent:* The Draft Permit contains a monthly average flow limit of 4.0 MGD and a maximum daily flow limit of 6.0 MGD for Outfall 017. The flow limits for Outfall 009 are 0.2 MGD average monthly and 0.5 MGD maximum daily. Taking into account the flow from both Outfall 009 and Outfall 017, and using the conservative 7Q10 low flow of the Chicopee River (82.7 MGD), the effluent from the Solutia facility has a dilution factor of approximately 13.7 with the receiving water (Appendix E). This large dilution factor, even under low flow conditions, coupled with the near-bank surface discharge points of the facility, allows pronounced mixing of the effluent well before it reaches the deeper, channelized portion of the river where any shortnose sturgeon would likely be found. Therefore, this species is not expected to come in direct contact with the effluent from the facility.
- 3. Thermal Impacts:* The Draft Permit contains a daily maximum temperature limit of 83°F for Outfall 009 and a daily maximum temperature limit of 85°F for Outfall 017. These limits have been decreased from 90°F in the existing permit and are readily attainable with a minimal mixing zone. Taking into account the dilution factor of 13.7, the combined effects of the

temperature limits for Outfall 009 and Outfall 017 will result in an estimated temperature increase of approximately 0.35°F in the summer and 3.27°F in the winter (Appendix E). Based on these calculations, the temperature limits contained in the Draft Permit meet the Class B Massachusetts Surface Water Quality Standards and are not thought to adversely affect adult shortnose sturgeon.

4. *Other Constituents:* The source of the non-contact cooling water at Solutia is the Springfield Municipal Water Supply, which contains chlorine. Therefore, total residual chlorine may be found in the discharge. In addition, stormwater runoff may contain elevated levels of total suspended solids. Based on the type of industrial activity, the stormwater runoff may also contain total recoverable zinc. These constituents, at levels above water quality standards, may have an adverse affect on shortnose sturgeon.

#### EPA's Review of the Likely Impacts

EPA has made the preliminary determination that the only endangered species under the jurisdiction of NMFS potentially influenced by the reissuance of this permit is the shortnose sturgeon (*Acipenser brevirostrum*). It is EPA's opinion that the operation of this facility, as governed by the permit action, is not likely to adversely affect the species of concern. The following factors have been identified that are expected to minimize any adverse impacts to shortnose sturgeon adults that enter the Chicopee River:

- The effluent permit limits for Outfall 009 and 017 of the Solutia Facility are as stringent as or more stringent than the current permit. There was no change in the outfall locations. The permit meets all Massachusetts Surface Water Quality Standards and includes monitoring and reporting requirements to ensure compliance.
- Even under worst-case conditions of low river flow and maximum facility discharge, a dilution factor of 13.7 was calculated for the effluent as it enters the Chicopee River.
- No appreciable shortnose sturgeon spawning is expected to take place in the vicinity of the facility. While shortnose sturgeon have been documented in the Chicopee River, the closest known concentration area of this species is 11.5 miles downstream from the facility discharge, in the Connecticut River.
- The facility has no intake structure on the Chicopee River. Therefore, no adverse affects to shortnose sturgeon adults from impingement can occur.
- Based on the preferred habitat of the species, any adult shortnose sturgeon that do travel in the stretch of the Chicopee River near the facility will likely be found in the deep channelized portion of the river. This behavior will isolate shortnose sturgeon from the near-bank, near-surface discharge of the facility. It is expected that shortnose sturgeon will not come in contact with discharge from the facility until the effluent has been subjected to significant dilution.

- The Draft Permit requires monitoring for total residual chlorine, total suspended solids, and total recoverable zinc.
- The Draft Permit requires that the permittee conduct acute WET testing at outfalls 009, and 017, among others. Each test must include the daphnid, *Ceriodaphnia dubia*, and fathead minnow, *Pimephales promelas*, in accordance with EPA Region I protocol.

### EPA Finding

Based on the relevant information examined, EPA finds that the renewal of the Solutia Indian Orchard Facility's NPDES permit is not likely to adversely affect the shortnose sturgeon or its critical habitat. EPA is coordinating a review of this finding with NMFS through the Draft Permit, this Fact Sheet, and an interagency letter.

If adverse effects do occur as a result of this permit action, or if new information becomes available that changes the basis for this determination, EPA will notify NMFS and initiate consultation.

### **IX. Monitoring**

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

### **X. State Certification Requirements**

EPA may not issue a permit unless the State of Massachusetts Department of Environmental Protection with jurisdiction over the receiving waters 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 Water Quality Standards. The staff of the State of Massachusetts Department of Environmental Protection 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.

### **XI. Comment Period, Hearing Requests, and Procedures for Final Decisions**

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 Sara Green, U.S. EPA, Office of Ecosystem Protection, Industrial Permits Branch, 1 Congress Street, Suite 1100, Boston, Massachusetts 02114-2023. Any person, prior to such date, may submit a request in writing for a public hearing to consider the Draft Permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public meeting may be held if the criteria stated in 40 C.F.R. § 124.12 are satisfied. In reaching a final decision on the Draft Permit, the EPA will respond to all significant comments and make these responses available to the public at EPA's Boston office.

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

**XII. EPA and MassDEP Contact**

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:

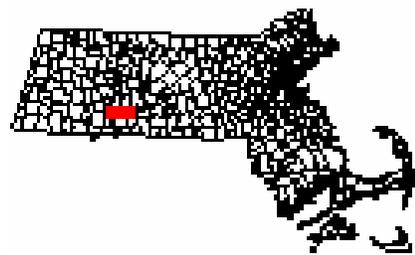
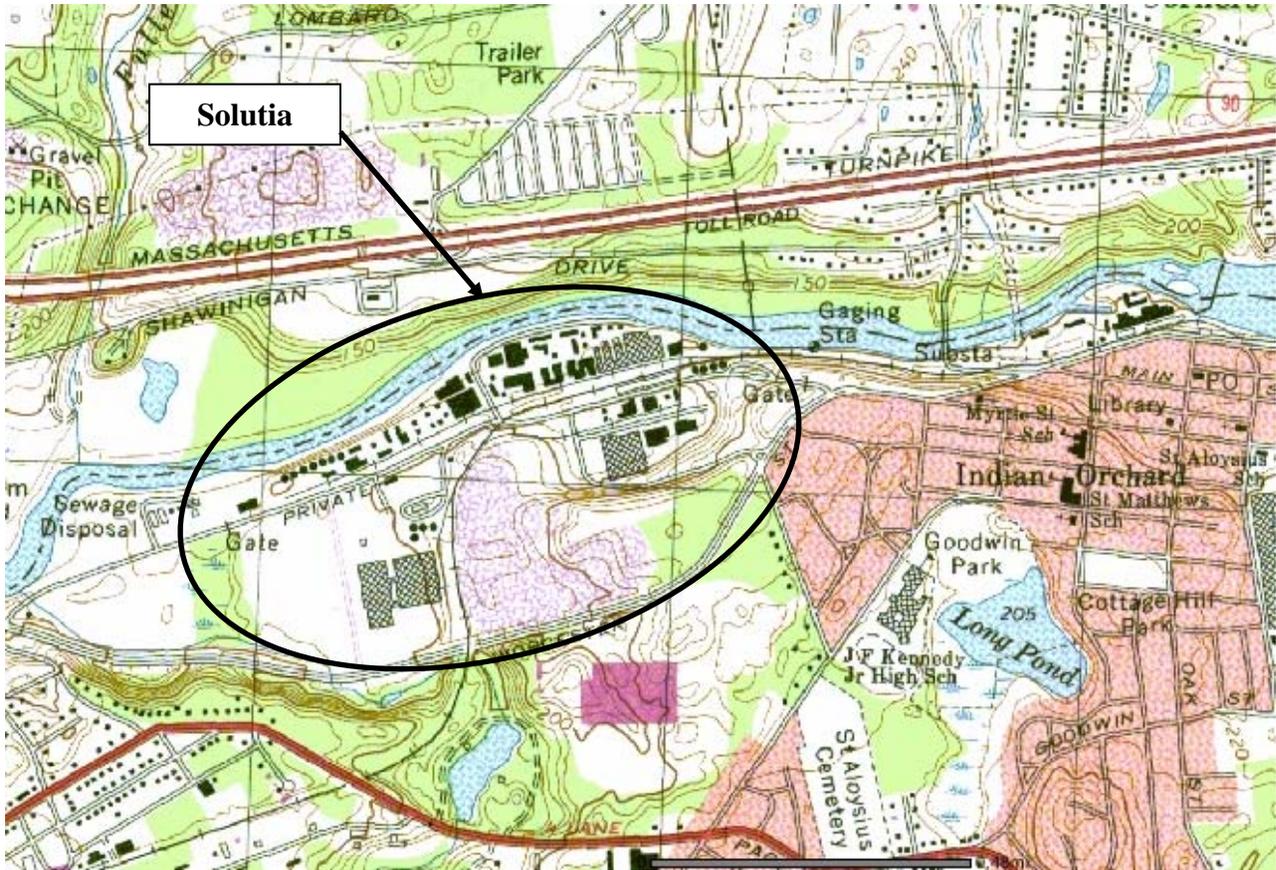
Sara Green, EPA New England – Region I  
One Congress Street, Suite 1100 (CIP)  
Boston, MA 02114-2023  
Telephone: (617) 918-1574 FAX: (617) 918-0574  
Email: [green.sara@epa.gov](mailto:green.sara@epa.gov)

Paul Hogan, Massachusetts Department of Environmental Protection  
Division of Watershed Management, Surface Water Permit Program  
627 Main Street, Second Floor  
Worcester, MA 01608  
Telephone: (508) 767-2796  
Email: [paul.hogan@state.ma.us](mailto:paul.hogan@state.ma.us)

12/4/2007

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

**ATTACHMENT A**  
**Solutia, Inc. (MA0001147)**  
**Site Locus Map**



Source: MassGIS USGS Topographic Maps  
United States December 1995

**ATTACHMENT B**  
**Solutia, Inc. (MA0001147)**  
**Outfall 009 – Dry Weather Sampling Results**  
**June 2003 through March 2007**

MONITORING PERIOD END DATE	Flow (gpd)		pH (s.u.)		Temperature (°F)
	Daily Max	Monthly Average	Daily Max	Daily Min	Daily Max
31-Mar-07	0.08	0.08	7.15	7.15	55.94
30-Nov-06	0.11	0.11	6.65	6.65	57.2
31-Oct-06	0.11	0.11	7.12	7.12	59
30-Sep-06	0.11	0.11	7.1	7.1	63.86
31-Aug-06	0.1	0.1	7.23	7.23	60.26
31-Jul-06	0.1	0.1	7.33	7.33	70.52
30-Jun-06	0.11	0.11	6.57	6.57	66.38
31-May-06	0.08	0.08	6.56	6.56	73.04
30-Apr-06	0.11	0.11	6.55	6.55	54.14
31-Mar-06	0.077	0.077	6.88	6.88	54.32
30-Nov-05	0.077	0.077	7.18	7.18	55.4
31-Oct-05	0.142	0.142	7.29	7.29	59.72
30-Sep-05	0.089	0.089	7.29	7.29	66.2
31-Aug-05	0.142	0.142	6.89	6.89	73.94
31-Jul-05	0.108	0.108	7	7	73.4
30-Jun-05	0.142	0.142	6.78	6.78	67.28
31-May-05	0.077	0.077	7.66	7.66	55.22
30-Apr-05	0.077	0.077	7.32	7.32	58.1
31-Mar-05	0.077	0.077	7.19	7.19	49.1
30-Nov-04	0.108	0.108	7.57	7.57	55.94
31-Oct-04	0.077	0.077	6.92	6.92	56.3
30-Sep-04	0.108	0.108	7.06	7.06	65.48
31-Aug-04	0.077	0.077	6.99	6.99	68.18
31-Jul-04	0.077	0.077	7.04	7.04	67.28
30-Jun-04	0.108	0.108	6.66	6.66	63.14
31-May-04	0.108	0.108	7.47	7.47	61.16
30-Apr-04	0.077	0.077	7.68	7.68	54.14
31-Mar-04	0.077	0.077	6.96	6.96	51.98
30-Nov-03	0.051	0.051	6.94	6.94	62.24
31-Oct-03	0.064	0.064	7.34	7.34	58.82
30-Sep-03	0.108	0.108	6.92	6.92	65.48
31-Aug-03	0.077	0.077	6.94	6.94	67.64
31-Jul-03	0.077	0.077	7.06	7.06	67.82
30-Jun-03	0.077	0.077	7.38	7.38	66.38

Permit Limit	Report	Report	Report	Report	90
Minimum	0.051	0.051	6.55	6.55	49.1
Maximum	0.142	0.142	7.68	7.68	73.94
Average	0.09	0.09	7.08	7.08	61.91
Standard Deviation	0.02	0.02	0.30	0.30	6.57
# measurements	34	34	34	34	34
# exceedences	NA	NA	NA	NA	0

**Solutia, Inc. (MA0001147)**  
**Outfall 017 – Dry Weather Sampling Results**  
**July 2005 through March 2007**

MONITORING PERIOD END DATE	Flow (mgd)		Temperature (°F)	pH (s.u.)	
	Daily Max	Monthly Average	Daily Max	Daily Max	Daily Min
31-Mar-07	2.82	2.73	79.7	7.35	6.56
28-Feb-07	3.26	2.89	63.5	6.86	6.6
31-Jan-07	3.46	3.41	65.84	-	7.07
31-Dec-06	-	-	-	-	-
30-Nov-06	1.97	0.91	69.92	7.34	6.59
31-Oct-06	3.46	2.81	79.16	7.28	7.07
30-Sep-06	-	-	-	-	-
31-Aug-06	2.26	0.97	83.84	7.25	6.85
31-Jul-06	4.03	2.71	83.84	7.63	6.56
30-Jun-06	2.26	1.39	83.12	7.06	6.72
31-May-06	1.81	1.22	79.52	7.13	6.67
30-Apr-06	3.26	2.5	82.94	6.85	6.57
31-Mar-06	3.262	1.663	66.92	6.72	6.69
28-Feb-06	1.265	1.265	64.76	6.68	6.68
31-Jan-06	3.262	3.262	60.98	6.6	6.6
31-Dec-05	0.795	0.795	56.12	7.71	7.71
30-Nov-05	4.795	2.812	71.24	7.63	7.53
31-Oct-05	4.154	3.082	76.28	7.48	7.25
30-Sep-05	4.385	3.838	74.66	7.63	7.35
31-Aug-05	4.291	3.502	84.2	7.49	7
31-Jul-05	3.816	2.159	77.36	7.25	7.09

Permit Limit	6	4	90	Report	Report
Minimum	0.795	0.795	56.12	6.6	6.56
Maximum	4.795	3.838	84.2	7.71	7.71
Average	3.09	2.31	73.89	7.22	6.90
Standard Deviation	1.10	0.98	8.80	0.36	0.36
# measurements	19	19	19	18	19
# exceedences	0	0	0	NA	NA

**Solutia, Inc. (MA0001147)**  
**Outfall 015 – Dry Weather Sampling Results**  
**March 2002 through April 2002**

MONITORING PERIOD END DATE	Flow (GPD)		pH (s.u.)		Temperature (°F)
	Daily Max	Monthly Average	Daily Max	Daily Min	Daily Max
30-Apr-02	0.00027	0.00027	6.85	6.85	59.54
31-Mar-02	0.002	0.002	7.2	7.2	54.7

Permit Limit	Report	Report	Report	Report	90
Minimum	0.00027	0.00027	6.85	6.85	54.7
Maximum	0.002	0.002	7.2	7.2	59.54
Average	0.001135	0.001135	7.025	7.025	57.12
Standard Deviation	0.00122329	0.001223	0.247487	0.247487	3.422396821
# measurements	2	2	2	2	2
# exceedences	NA	NA	NA	NA	0

\*‘ND’ recorded each monitoring period for June 2003 – March 2006

**Solutia, Inc. (MA0001147)**  
**Outfall 010S – Dry Weather Sampling Results**  
**March 2005 through March 2007**

MONITORING PERIOD END DATE	Flow (GPD)		pH (s.u.)		Temperature (°F)	Total Residual Chlorine (mg/l)
	Daily Max	Monthly Average	Daily Max	Daily Min	Daily Max	Daily Max
31-Mar-07	0	0	6.82	6.82	59.9	-
30-Jun-05	ND	ND	ND	ND	ND	-
31-May-05	ND	ND	ND	ND	ND	-
30-Apr-05	NQ	NQ	NQ	NQ	NQ	NQ
31-Mar-05	0.000771	0.000771	7.13	7.13	45.14	-

Permit Limit	Report	Report	Report	Report	90	0.5
Minimum	0	0	6.82	6.82	45.14	0
Maximum	0.000771	0.000771	7.13	7.13	59.9	0
Average	0.000386	0.000386	6.975	6.975	52.52	-
Standard Deviation	NA	NA	NA	NA	NA	NA
# measurements	2	2	2	2	2	0
# exceedences	NA	NA	NA	NA	0	0

\*‘ND’ recorded each monitoring period for March 2002 – Nov 2004; and July 2005 – Nov 2006

‘NQ’ denotes Not Quantifiable      ‘ND’ denotes No Discharge      ‘-’ denotes No Data

**ATTACHMENT B**  
**Solutia, Inc. (MA0001147)**  
**Outfall 014 – Dry Weather Sampling Results**  
**June 2003 through March 2007**

MONITORING PERIOD END DATE	Flow (GPD)		pH (s.u.)		Temperature (°F)
	Daily Max	Monthly Average	Daily Max	Daily Min	Daily Max
31-Mar-07	NQ	NQ	NQ	NQ	NQ
30-Nov-06	ND	ND	ND	ND	ND
31-Oct-06	0	0	7.33	7.33	53.24
30-Sep-06	0	0	7	7	66.38
31-Aug-06	0	0	7.05	7.05	78.44
31-Jul-06	-	-	-	-	-
30-Jun-06	NQ	NQ	NQ	NQ	NQ
31-May-06	-	-	-	-	-
30-Apr-06	0	0	6.94	6.94	59
31-Mar-06	ND	ND	ND	ND	ND
30-Nov-05	ND	ND	ND	ND	ND
31-Oct-05	NQ	NQ	NQ	NQ	NQ
30-Sep-05	ND	ND	ND	ND	ND
31-Aug-05	0.00003	0.00003	7.18	7.18	75.56
31-Jul-05	0.000113	0.000113	7.12	7.12	73.78
30-Jun-05	ND	ND	ND	ND	ND
31-May-05	ND	ND	ND	ND	ND
30-Apr-05	NQ	NQ	NQ	NQ	NQ
31-Mar-05	0.00108	0.00108	7.19	7.19	70.16
30-Nov-04	0.00003	0.00003	7.72	7.72	57.74
31-Oct-04	0.00162	0.00162	6.84	6.84	80.24
30-Sep-04	0.00003	0.00003	7.09	7.09	64.4
31-Aug-04	0.000023	0.000023	7.31	7.31	69.92
31-Jul-04	0.00009	0.00009	7.18	7.18	77
30-Jun-04	ND	ND	ND	ND	ND
31-May-04	0.00036	0.00036	7.26	7.26	80.96
30-Apr-04	ND	ND	ND	ND	ND
31-Mar-04	0.006096	0.006096	6.82	6.82	55.58
30-Nov-03	ND	ND	ND	ND	ND
31-Oct-03	ND	ND	ND	ND	ND
30-Sep-03	ND	ND	ND	ND	ND
31-Aug-03	ND	ND	ND	ND	ND
31-Jul-03	ND	ND	ND	ND	ND
30-Jun-03	0.000135	0.000135	7.24	7.24	81.14

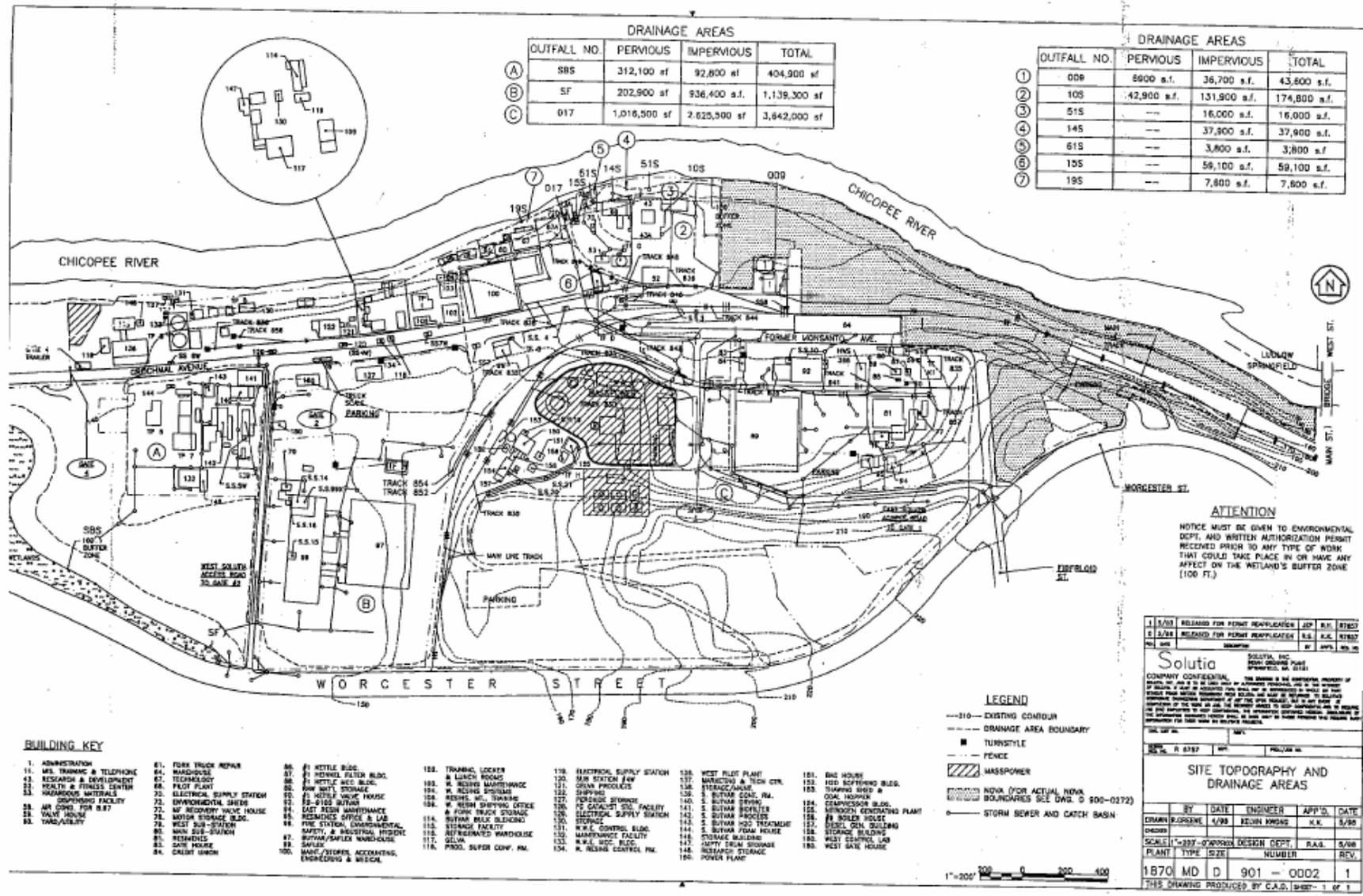
Permit Limit	Report	Report	Report	Report	90
Minimum	0	0	6.82	6.82	53.24
Maximum	0.006096	0.006096	7.72	7.72	81.14
Average	0.00064	0.00064	7.151333	7.151333	69.56933333
Standard Deviation	0.00158	0.00158	0.222417	0.222417	9.696723649
# measurements	15	15	15	15	15
# exceedences	NA	NA	NA	NA	0

‘NQ’ denotes Not Quantifiable      ‘ND’ denotes No Discharge      ‘-’ denotes No Data

**ATTACHMENT C**  
**Solutia, Inc. (MA0001147)**  
**Detailed Outfall Summary**

<u>Outfall No.</u>	<u>Status</u>	<u>Discharge Source</u>	<u>Drainage Area, s.f.</u>	<u>Impervious Area</u>	<u>Discharge Volume</u>
009	Active	AC condensate, NCCW, chiller, and SW	43,600	84 % (36,700)	0.03 MGD ave. 0.04 MGD max.
017	Active	NCCW and SW	3,852,100	70% (2,702,900)	1.7 MGD ave. 3.8 MGD max
010S	Active	Storm Water	174,800	75 % (131,900)	
051S	Active	Storm Water	16,000	100%	
014S	Active	Storm Water	37,900	100%	
061S	Active	Storm Water	3,800	100%	
015S	Active	Storm Water	59,100	100%	
019S	Active	Storm Water	7,600	100%	
SBS (020S)	Active	Storm Water	404,900	23% (92,800)	
SF (021S)	Active	Storm Water and Groundwater	1,139,300	82% (936,400)	
004W	Plugged				
006W	Plugged				
009W	Plugged				
003	Transferred to Nova Corp.				
004	Transferred to Nova Corp.				
006	Transferred to Nova Corp.				
007	Transferred to Nova Corp.				
010	Used to discharge cooling tower blowdown, now only SW and renamed 010S				
018	Outfall no longer in service				

**ATTACHMENT D**  
**Solutia, Inc. (MA0001147)**  
**Outfall Locus Map**



**ATTACHMENT E**  
**Solutia, Inc. (MA0001147)**  
**Dilution Calculations**

Calculation of the combined effect of the Solutia discharge on instream temperatures:

*Estimated upstream summer and winter 7Q10 and temperatures<sup>1</sup>:*

Summer = 82.728 MGD at 80°F

Winter = 82.728 MGD at 40°F

*Proposed permit maximum flows and temperatures:*

Outfall 017 = 6 MGD at 85°F

Outfall 009 = 0.5 MGD at 83°F

*Estimated downstream temperatures after mixing:*

$$\text{Summer} = \frac{(6.0 \times 85) + (0.5 \times 83) + (82.728 \times 80)}{(6.0 + 0.5 + 82.728)} = \mathbf{80.35^\circ\text{F}}$$

$$\text{Winter} = \frac{(6.0 \times 85) + (0.5 \times 83) + (82.728 \times 40)}{(6.0 + 0.5 + 82.728)} = \mathbf{43.27^\circ\text{F}}$$

$$\text{Dilution Factor} = \frac{(6.0 + 0.5 + 82.728)}{(6.0 + 0.5)} = \mathbf{13.7}$$

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<sup>1</sup> Data taken from USGS Gaging Station 01177000, Chicopee River at Indian Orchard, MA