

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

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KENNETH L. KIMMELL
Commissioner

August 2, 2013

In the Matter of
University of Massachusetts - Boston

Docket No. 2013-007 and 2013-009
File No. WQC and Surface WDP
MA0040304

FINAL DECISION

I have reviewed the attached Settlement Agreement fully executed by the University of Massachusetts at Boston representative Ellen O'Connor, Vice Chancellor for Administration and Finance, on July 15, 2013, and by Beth Card, Assistant Commissioner for the Department, on July 17, 2013, and the Joint Motion for Approval of Settlement Agreement. The Department issues this Final Decision approving and incorporating the Settlement Agreement.

Kenneth Kimmell
Commissioner

SERVICE LIST

In The Matter Of: University of Massachusetts – Boston

Docket No. 2013-007 File No. NPDES Permit MA 0040304
Boston

Representative

Ralph A. Child, Esq.
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Party

APPLICANT/PETITIONER
University of Massachusetts - Boston

Robert Brown
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One Winter Street
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DEPARTMENT

David Ferris
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One Winter Street
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ANALYST

Date: August 2, 2013

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

OFFICE OF APPEALS AND DISPUTE RESOLUTION

IN THE MATTER OF:)	
University of Massachusetts - Boston)	
)	Docket Nos. 2013-007 <i>and</i>
Water Quality Certification <i>and</i> Surface)	2013-009
Water Discharge Permit No. MA0040304)	

SETTLEMENT AGREEMENT

I. THE PARTIES

1. The Department of Environmental Protection (“MassDEP” or “the Department”) is a duly constituted agency of the Commonwealth of Massachusetts established pursuant to M.G.L. c. 21A, §7. Its principal office is located at One Winter Street in Boston, Massachusetts 02108.
2. The University of Massachusetts Boston (the “Permittee” or “UMass Boston”) is a public institution of higher education established pursuant to M.G.L. c. 15A, §5. UMass Boston is located at 100 Morrissey Boulevard in Boston, Massachusetts 02125.

II. PURPOSE

This Settlement Agreement is intended to resolve all the issues in these consolidated appeals consistent with 310 C.M.R. 1.01(8)(c).

III. STATUTORY AUTHORITY

1. The Parties enter into this Settlement Agreement pursuant to M.G.L. c. 21, § 44(1) which authorizes MassDEP to order a discharger to apply forthwith for a permit, or for a new permit, or to take other appropriate action under rules and regulations adopted by it, subject to the provisions of M.G.L. c. 30A, and to cease and desist from making or allowing further discharges beyond a specified date until compliance with the order is fully achieved,

whenever it appears that there are discharges of pollutants without a required permit, or that such discharges are in violation of a permit issued under this chapter, or in contravention of any regulation, standard or plan adopted by MassDEP.

2. MassDEP finds that, in order for UMass Boston to comply with certain of the conditions of NPDES Permit No. MA0040304, it is necessary for UMass Boston to acquire, install, and operate substantial improvements to the permitted facility. The Order herein provides a schedule for compliance which the Department has determined to be reasonable. The Parties agree that the Permittee needs time to evaluate certain issues and install certain equipment to enable it to come into compliance with the NPDES Permit and the Massachusetts Clean Waters Act, M.G.L. c. 21, §§26-53. This Settlement Agreement, including the Order herein, is issued with the consent of UMass Boston.

IV. DEFINITIONS

Unless otherwise defined herein, terms used in this Settlement Agreement shall have the meaning given to those terms in the federal Clean Water Act, 33 U.S.C. §§ 1251 *et seq.*, the regulations promulgated thereunder, and NPDES Permit No. MA0040304. The following additional terms are defined for purposes of this Settlement Agreement:

- a. "Non-Contact Cooling Water" ("NCCW") means water that is used for cooling purposes and that does not come into direct contact with any raw material, intermediate product, waste product (other than heat), or finished product.
- b. "NPDES Permit" means NPDES Permit No. MA0040304, co-issued to UMass Boston by the United States Environmental Protection Agency and MassDEP on February 7, 2013.

- c. "Order Date" means the date on which the date on which the Consented To Order For Compliance to be issued by the United States Environmental Protection Agency ("EPA") to UMass Boston pursuant to Section 309(a)(3) of the Clean Water Act, 33 U.S.C. §§ 1251 et seq. (the "Act"), 33 U.S.C. § 1319(a)(3), takes effect, as specified in paragraph 6 in Section V of this Settlement Agreement.
- d. "Permit Effective Date" means the date identified in the "final permit decision," to be issued by EPA Region 1's Director of the Office of Ecosystem Protection, pursuant to 40 C.F.R. § 124.19(l)(2)(i), as the date when the provisions of the NPDES Permit take effect, as specified in paragraph 7 in Section V of this Settlement Agreement.
- e. "Study" means the fish return design evaluation and survivability assessment described in Attachment A.
- f. "Variable Frequency Drive" ("VFD") means equipment that allows the pumping frequency of an existing single-speed pump to be adjusted.

V. STATEMENT OF FACTS

1. UMass Boston is a public institute of education with a campus located on Columbia Point in Boston, Massachusetts. In the cooling of its campus buildings, UMass Boston uses NCCW, which it withdraws from Savin Hill Cove through a cooling water intake structure ("CWIS"), transports to a pumphouse and through heat exchangers, and then discharges to Dorchester Bay.
2. The Permittee is a person under Section 502(5) of the Act, 33 U.S.C. § 1362(5), and under M.G.L. c. 21, § 26A. The Permittee owns a facility from which it discharges pollutants, as

defined in Sections 502(6) and (12) of the Act, 33 U.S.C. §§ 1362(6) and (12), and in M.G.L. c. 21, §26A, from a point source, as defined in Section 502(14) of the Act, 33 U.S.C. § 1362(14), and in 314 C.M.R. 3.02, to Dorchester Bay, which flows into Boston Harbor, which, in turn, empties into the Atlantic Ocean. All are waters of the Commonwealth, as defined in M.G.L. c. 21, §26A, and waters of the United States as defined in 40 C.F.R. § 122.2 and, therefore, navigable waters under Section 502(7) of the Act, 33 U.S.C. § 1362(7).

3. The Permittee's withdrawal of NCCW through a CWIS is subject to the requirements of Section 316(b) of the Act, 33 U.S.C. § 1326(b), and 314 C.M.R. 4.05.
4. On February 7, 2013, the Director of MassDEP's Wastewater Program under the authority of M.G.L. c. 21, § 43, and the Director of the Office of Ecosystem Protection of EPA Region 1 jointly issued the NPDES Permit to UMass Boston under the authority given to the Administrator of EPA by Section 402 of the Act, 33 U.S.C. § 1342. The discharge of NCCW was previously covered under NCCW General Permit MAG250004, which was issued on April 25, 2000, but which expired on April 25, 2005. UMass Boston applied for an individual permit on October 28, 2008, and its discharges and cooling water withdrawals remained covered under the expired General Permit until the Permit Effective Date. The permitted facility is not eligible for coverage under the new NCCW General Permit issued July 31, 2008, because the volume of the facility's NCCW discharges exceeds 1 million gallons per day ("MGD"). The NPDES Permit includes, among other requirements, thermal discharge limits imposed under Section 316(a) of the Act, 33 U.S.C. § 1326(a), and 314 C.M.R. 4.05,

and CWIS requirements imposed under Section 316(b) of the Act, 33 U.S.C. § 1326(b), and 314 C.M.R. 4.05.

5. On March 11, 2013, the Permittee timely filed a Petition for Review of certain conditions of the NPDES Permit with EPA's Environmental Appeals Board ("EAB") pursuant to 40 C.F.R. § 124.19. More specifically, UMass Boston sought EAB review of, among other things, the NPDES Permit's thermal discharge limits and CWIS requirements. The filing of the Petition for Review stayed the effect of the provisions of the NPDES Permit pursuant to 40 C.F.R. § 124.16(a). The Permittee also timely filed these consolidated appeals of the NPDES Permit and MassDEP's Water Quality Certification for the NPDES Permit with MassDEP's Office of Administrative Appeals and Dispute Resolution ("OADR"). The Presiding Officer stayed these appeals pursuant to 310 CMR 1.01(6)(h).
6. While the appeal were pending before the EAB and OADR, EPA, UMass Boston, and MassDEP commenced settlement negotiations. As a result of these negotiations, the parties agreed to resolve the pending federal and state appeals of the NPDES Permit by taking a number of steps, including the parties' submission of a motion to OADR requesting the Commissioner's approval of this Settlement Agreement in accordance with 310 CMR 1.01(8)(c).
7. With respect to the pending appeal before EPA's EAB, the parties have agreed that UMass Boston will withdraw its appeal and, upon dismissal of the appeal by EPA's EAB, EPA Region 1's Director of the Office of Ecosystem Protection will issue a "final permit decision" pursuant to 40 C.F.R. § 124.19(l)(2)(i). The final permit decision will notify the Permittee of

the effective date of NPDES Permit No. MA0040304, as issued on February 7, 2013. In addition, EPA and UMass Boston have agreed to enter into a Consented To Order For Compliance that is consistent with the terms of this Settlement Agreement upon dismissal of the appeal by EPA's EAB.

8. The NPDES Permit authorizes the Permittee to discharge NCCW from the permitted facility to Dorchester Bay, and to withdraw water for cooling from Savin Hill Cove through the CWIS, subject to the effluent limitations, monitoring requirements, and other conditions specified therein.
9. Part I.D.1.a of the NPDES Permit requires the Permittee to install and operate VFDs on at least two of the permitted facility's 7,500-gpm capacity saltwater pumps.
10. Part I.D.1.a.i of the NPDES Permit limits the maximum daily intake flow to 18.4 MGD, maximum monthly average flow to 17.2 MGD, and annual average daily flow to 12.9 MGD.
11. Part I.D.1.a.ii of the NPDES Permit limits the through-screen velocity at the CWIS's traveling screens to no more than 0.5 feet per second (fps).
12. Part I.D.1.c of the NPDES Permit requires the Permittee to install and operate a new fish return trough that is separate from the NCCW discharge pipe, avoids vertical drops and sharp turns, and returns impinged aquatic organisms to the receiving water at a location that minimizes the potential for reimpingement. Part I.D.1.c of the NPDES Permit further requires that the end of the new fish return trough be submerged whenever the traveling screen is rotated.

13. Section 301(a) of the Act, 33 U.S.C. § 1311(a), makes unlawful the discharge of pollutants to waters of the United States except in compliance with, among other things, the terms and conditions of an NPDES permit issued pursuant to Section 402 of the Act, 33 U.S.C. § 1342. M.G.L. c. 21, § 42 makes unlawful the discharge of pollutants to waters of the Commonwealth, as defined in M.G.L. c. 21, § 26A, except in compliance with, among other things, the terms and conditions of a permit issued pursuant to M.G.L. c. 21, § 43.
14. The permitted facility does not currently employ VFDs on any of its saltwater pumps.
15. The Permittee has advised EPA that its withdrawal and discharge of water in late summer exceeds the intake flow limits contained in the NPDES Permit.
16. Data submitted by the Permittee indicate that the facility's withdrawal of water in late summer may, under certain conditions, create a through-screen velocity in excess of the limit contained in the NPDES.
17. The current fish return system does not comply with the terms contained within the NPDES Permit.
18. The Permittee's withdrawal of water without the use of VFDs and its operation of a fish return system that does not comply with the conditions in the NPDES Permit violate Section 301(a) of the Act, 33 U.S.C. § 1311(a), and M.G.L. c. 21, § 42. In addition, the Permittee's late summer withdrawal and discharge of water in excess of the limits contained within the NPDES Permit will violate, and the creation of a through-screen velocity in excess of the limit contained in the NPDES Permit would violate, Section 301(a) of the Act, 33 U.S.C. § 1311(a), and M.G.L. c. 21, § 42.

19. In order to attain compliance with the requirements of the NPDES Permit, the Permittee must, among other things, install and operate both the VFDs and a satisfactory fish return trough.

20. The Permittee has advised EPA and MassDEP regarding how much time it reasonably needs to install and commence full operation of the VFDs. EPA and MassDEP agree that it is reasonable to allow UMass Boston such time to install and commence full operation of the VFDs. The Permittee has also advised EPA and MassDEP, however, that it currently believes that it may not be feasible to construct and operate a new fish return trough that satisfies all of the pertinent conditions of the NPDES Permit. As a result, UMass Boston has indicated to EPA that it wishes to take a reasonable amount of time to conduct a study to assess both the feasibility of constructing and operating such a trough and the extent to which it would improve the survival of impinged fish or other organisms (the "Study"). EPA and MassDEP agree that it is reasonable to allow UMass Boston to complete the Study under the circumstances presented here.

21. MassDEP issues this consented to Order to provide a schedule according to which the Permittee will take the steps necessary for it to come into compliance with the NPDES Permit.

22. The Permittee has worked cooperatively with MassDEP in the development of this Settlement Agreement, including the consented to Order herein.

VI. ORDER

1. Accordingly, pursuant to M.G.L. c. 21, § 44(1), it is hereby ordered that the Permittee shall:
 - a. Comply with the following schedule for installing and operating VFDs and meeting the limits contained in the NPDES Permit for maximum rise in

temperature, maximum CWIS through-screen intake velocity, maximum intake flow and discharge of NCCW, and entrainment sampling and reporting:

- i. By June 30, 2014, the Permittee shall:
 1. complete installation and begin normal operation of VFDs on at least two of the permitted facility's 7,500-gpm capacity saltwater pumps, as required by Part I.D.1.a.i of the NPDES Permit;
 2. comply with the rise in temperature discharge limitations and rise in temperature monitoring requirements, and the CWIS through-screen intake velocity limits, contained in the NPDES Permit at Parts I.A.1 and I.D.1.a.ii, respectively; and
 3. comply with the maximum intake and discharge flow limitations contained in the NPDES Permit at Parts I.D.1.a.i and I.A.1, respectively.
 - ii. On February 15, 2015, the Permittee shall begin biological entrainment sampling and reporting as described in Part I.E of the NPDES Permit.
- b. Comply with the following schedule for meeting the conditions contained in the NPDES Permit related to the operation of the fish return system:
- i. In lieu of immediate construction of the new fish return trough described in Part I.D.1.c of the NPDES Permit, conduct and complete the Study described in Attachment A and in accordance with the following conditions:

1. By August 1, 2014, hire a qualified contractor to conduct the Study;
 2. Within 14 days after hiring a Study contractor, notify EPA and MassDEP of such hiring;
 3. Conduct impingement monitoring and sampling in connection with the Study for up to two full years, consistent with the provisions of Part I.G.4 of the NPDES Permit (as currently existing or hereafter modified), and commencing on February 15, 2015, the same date set forth in Section VI.1.a.ii of this Settlement Agreement;
 4. Impingement monitoring and sampling conducted in accordance with Part I.G.4 of the NPDES Permit (as currently existing or hereafter modified) will be deemed to satisfy the requirements of Section VI.1.b.i.3 of this Settlement Agreement. The Permittee may choose to employ appropriately trained faculty and students to conduct some of the tasks associated with monitoring and sampling, provided the requirements for personnel qualifications described in Part I.G are otherwise met.
- ii. Within 90 days after completing the impingement monitoring and sampling required by Section VI.1.b.i.3 and 4 of this Settlement Agreement, provide EPA and MassDEP with the Study, data collected during the study period, and any relevant conclusions drawn based on these materials, and:

1. provide a proposed design and schedule for construction of a fish return trough that will comply with the conditions contained in the NPDES Permit at Part I.D.1.c. Upon receiving approval from EPA to construct a proposed design, the Permittee may request that EPA modify this order to provide sufficient time to make the necessary changes to the system. Or,
2. if the Permittee should decide that the results of the Study support modification of Part I.D.1.c of the NPDES Permit, provide a request that the Permit be modified pursuant to 40 C.F.R. § 122.62 and 314 C.M.R. 3.13 together with a detailed and comprehensive assessment explaining the bases for the Permittee's conclusion that it is not feasible to construct and operate a fish return trough that would comply with the conditions contained in the NPDES Permit at Part I.D.1.c . If the Permittee submits a request for modification, MassDEP will consider the request, the Study, and any other relevant information and material. MassDEP may also request additional information. Within a reasonable period, MassDEP, in conjunction with EPA, will provide UMass Boston with a written decision on the request. In the event MassDEP denies the application, in whole or in part, MassDEP's response shall set forth the reasons upon which the denial is based. UMass Boston reserves

its right to appeal any such denial to OADR pursuant to 310 C.M.R.

1.00.

Interim Limits and Requirements

2. In the interim period from the Order Date until the date of VFD installation and normal operation, the Permittee shall continuously monitor the rise in temperature and shall report to EPA and MassDEP the maximum daily rise in temperature.
3. While the Study is ongoing, the Permittee shall continue to operate the existing fish return system in a manner that is at least as protective to aquatic organisms as the current configuration.
4. The Permittee shall also comply with all effluent limitations, monitoring requirements and other conditions specified in the NPDES Permit but not addressed in Section VI of this Settlement Agreement.
5. For each calendar quarter reporting period (January-March, April-June, July-September, October-December) after the Order Date, and continuing until completion of construction and attaining compliance with all of the NPDES Permit requirements, the Permittee shall report to EPA and MassDEP on the performance of its obligations under Section VI of this Settlement Agreement. The report shall be due on the last day of the month following the end of the quarter. Each report submitted under this Paragraph shall include a description of:
 - a. Activities undertaken during the reporting period directed at achieving compliance with Section VI of this Settlement Agreement;

- b. Activities expected to be taken during the next reporting period in order to achieve compliance with Section VI of this Settlement Agreement; and
 - c. The Permittee's compliance with the provisions outlined in Section VI of this Settlement Agreement.
6. Where Section VI of this Settlement Agreement requires a specific action to be performed within a certain time frame, the Permittee shall submit a written notice of compliance or noncompliance with each deadline. Notification must be mailed within fourteen (14) calendar days after each required deadline. The timely submission of a required report shall satisfy the requirement that a notice of compliance be submitted. In the event that the Permittee learns in advance that it will fail to comply with a deadline, the Permittee shall provide EPA and MassDEP with such notice in writing within 14 days after it first became aware that it would miss the deadline.
7. If noncompliance or anticipated non-compliance is reported, notification should include the following information:
- a. A description of the noncompliance;
 - b. A description of any actions taken or proposed by the Permittee to remedy the noncompliance and satisfy the lapsed schedule requirements;
 - c. An approximate date by which the Permittee will perform the required action; and
 - d. A description of any factors that explain or mitigate the noncompliance.

8. After a notification of noncompliance has been filed, compliance with the past-due requirement shall be reported by submitting any required documents or providing EPA and MassDEP with a written report indicating that the required action has been achieved.
9. Submissions required under this Settlement Agreement shall be in writing and shall be transmitted electronically or by mail to:

MassDEP/DWM
627 Main St., 2nd Floor
Worcester, MA 01608
Attn: Gerald Szal
gerald.szal@massmail.state.ma.us

with a copy to:

MassDEP Office of General Counsel
One Winter Street, 3rd Floor
Boston, MA 02108
Attn: Robert Brown
robert.brown@massmail.state.ma.us

or such other recipient(s) as MassDEP may designate.

10. The reporting requirements set forth in this Section do not relieve the Permittee of its obligation to submit any other reports or information as required by State, Federal or local law.

VII. FORCE MAJEURE

1. "Force Majeure," for purposes of this Settlement Agreement, is defined as any event arising from causes beyond the control of the Permittee, of any entity controlled by the Permittee, or of the Permittee's contractors that delays or prevents the performance of any obligation under

Section VI of this Settlement Agreement despite best efforts by the Permittee to fulfill the obligation. The requirement that the Permittee exercise “best efforts to fulfill the obligation” includes using best efforts to anticipate any potential Force Majeure event and best efforts to address the effects of any such event (a) as it is occurring and (b) after it has occurred to prevent or minimize any resulting delay to the greatest extent possible. “Force Majeure” does not include normal inclement weather, unanticipated or increased costs or expenses of work, the financial difficulty of performing such work, or the failure of the Permittee to make complete and timely application for any required approval or permit unless caused by a separate Force Majeure event. “Force Majeure” may include, but is not limited to, acts of God including floods, blizzards, hurricanes, and other extreme weather, labor strikes or unrest, fires, explosions, war, civil disturbances, or judicial orders. Under the definition of “Force Majeure” as set forth above in this Paragraph, “Force Majeure” may or may not include construction, labor and equipment delays.

2. If any Force Majeure event occurs or has occurred that may delay the performance of any obligation under Section VI this Settlement Agreement or causes the Permittee to be in potential violation of any provision of Section VI of this Settlement Agreement, the Permittee shall provide written notice, within five (5) business days of when the Permittee first knew that the event might cause a delay, to the parties listed in paragraph 9 in Section VI of this Settlement Agreement. Such written notice shall include an explanation of: the reason(s) for delay; the anticipated duration of the delay; all actions taken or to be taken to prevent, minimize or mitigate the delay or the effect of the delay; the bases for Permittee’s conclusion

that the delay is attributable to a Force Majeure event. The Permittee shall include with any written notice the rationale and all reasonably obtainable documentation supporting the claim that the delay was attributable to a Force Majeure. Failure to comply with the above requirements shall preclude the Permittee from asserting any claim of Force Majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. The Permittee shall be deemed to know of any circumstance of which the Permittee, the Permittee's contractors, or any entity controlled by the Permittee or under the common control of the Permittee and others, knew or should have known by the exercise of due diligence.

3. If MassDEP agrees that the delay or anticipated delay is attributable to a Force Majeure event, the time for performance of the affected obligations under this Settlement Agreement will be extended for such time as is necessary to complete those obligations. Any subsequent schedule deadlines that MassDEP agrees are affected by the Force Majeure event will also be extended. An extension of the time for performance of the obligations affected by the Force Majeure event shall not, of itself, extend the time for performance of any other obligation.
4. MassDEP will notify the Permittee in writing of the length of any extension or of its determination that the delay or anticipated delay is not attributable to a Force Majeure event.

VIII. GENERAL PROVISIONS

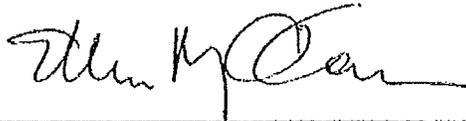
1. This Settlement Agreement does not constitute a waiver or a modification of the terms and conditions of the NPDES Permit. The NPDES Permit remains in full force and effect. MassDEP reserves the right to seek any and all remedies available under the Massachusetts

Clean Waters Act, M.G.L. c. 21, §§ 26-53, and other applicable laws, for any violation cited in this Settlement Agreement.

2. If this Settlement Agreement is approved by the Commissioner, the parties waive whatever rights they have to further administrative review before the Department and any and all remedies, claims for relief and otherwise available rights to judicial review that they may have with respect to any issue of fact or law at issue in this adjudicatory proceeding. Nothing in this paragraph will limit UMass Boston's rights as set forth in Section VI.1.b.ii.2 of this Settlement Agreement.
3. This Settlement Agreement shall become effective in accordance with 310 C.M.R. 1.01(8)(c) upon the Commissioner's issuance of a Final Decision.

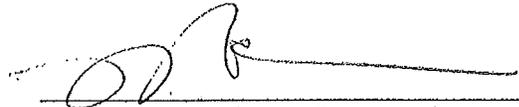
Consented To By UMass Boston:

7/15/13
Date


Ellen O'Connor
Vice Chancellor, Administration and Finance
University of Massachusetts Boston

IT IS SO ORDERED:

7/17/13
Date


Beth Card, Assistant Commissioner
Bureau of Resource Protection

ATTACHMENT A

UMass Boston shall complete an evaluation of potential fish return system alternatives with the goal of identifying and designing a feasible configuration at the permitted facility that maximizes the potential for the safe return of impinged organisms to the receiving water (the "Study"). The Study shall: 1) evaluate the feasibility of constructing a fish return trough that complies with the conditions in Part I.D.1.c. of the NPDES Permit; and 2) assess the impact of alternative configurations of the fish return system – including the existing configuration – on the survival of organisms impinged as a result of the facility's withdrawal of non-contact cooling water ("NCCW"). In assessing survival, the Study shall include bench-scale testing or the collection of empirical site-specific data, or both, and may incorporate a review of relevant scientific literature. By October 1, 2014, UMass Boston shall provide EPA with a detailed description of the sampling and data collection it intends to conduct for the survival assessment. EPA reserves the right to provide comments to UMass Boston on this submittal by January 15, 2015.

At a minimum, the Study shall evaluate items 1-3 below. In addition, various combinations of elements from 1-3 may also be evaluated.

- 1) The existing fish return trough
 - a. Evaluation of this alternative shall include an assessment of survival of impinged fish 96 hours after exposure to heated NCCW representative of worst-case conditions under the NPDES Permit (12.5°F), and including an evaluation of the repercussions of returning fish to Dorchester Bay at periods around low slack tide.

- 2) A new fish return trough that:
 - a. is separate from the currently-configured NCCW return pipe;
 - b. transfers impinged organisms to the receiving water at a location that minimizes the potential for re-impingement;
 - c. avoids sharp turns and vertical drops; and
 - d. is submerged at the discharge end at all times when the traveling screen is rotated. In the event that it is not feasible to construct a return trough that is submerged whenever the traveling screen is rotated, the Study shall describe the degree to which it is infeasible to meet the condition (*i.e.*, how often the NPDES Permit's condition would be violated) and shall also consider alternative discharge locations where the end of a fish return trough would be less than one foot above mean low tide and where impinged organisms would be released into a water depth of at least two feet at all times.

- 3) An impingement holding tank that could:
 - a. allow the Permittee to release fish to Dorchester Bay only at times when the end of the return trough is submerged;
 - b. allow the Permittee to release fish to Dorchester Bay when the temperature of the NCCW is not likely to induce thermal stress in impinged fish; and
 - c. allow the Permittee to release fish to Dorchester Bay in a way that does not cause further stress to impinged fish.