AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act as amended, (33 U.S.C. §§1251 et seq.; the "CWA"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§26-53),

Twin Rivers Technologies US Inc.

is authorized to discharge from the facility located at

Twin Rivers Technologies US Inc.
780 Washington Street
Quincy, MA 02169

to receiving water named

Weymouth Fore River (MA74-14) and Town River Bay (MA74-15)
Weymouth and Weir River Basins

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

This permit shall become effective on the first day of the calendar month following 60 days after signature.

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

This permit supersedes the permit issued on October 31, 2002.

This permit consists of 15 pages in Part I including effluent limitations, monitoring requirements, and state permit conditions, and 25 pages in Part II including Standard Conditions.

Signed this 12th day of February, 2010

/S/ SIGNATURE ON FILE

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

Glenn Haas, Director
Division of Watershed Management
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge **untreated storm water** from **outfall 001** to the Weymouth-Fore River. Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Units	Discharge Limitation		Monitoring Requirement[1,2]	
		Average Monthly	Maximum Daily	Measurement Frequency[3]	Sample Type
Flow Rate	GPD	Report	Report	1 / Quarter	Estimate
TSS	mg/l	Report	100	1 / Quarter	Grab
Oil & Grease	mg/l	*****	15	1 / Quarter	Grab
pH[4]	s.u.	6.5-8.5 range (See Part I.A.3.b. Page 5)		1 / Quarter	Grab
Nitrogen (nitrate plus nitrite)[5,7]	mg/l	*****	Report	1 / Quarter	Grab
Total Recoverable Zinc[6,7]	mg/l	*****	Report	1 / Quarter	Grab

See page 3 for explanation of footnotes

Footnotes:

1. All samples shall be collected from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (i.e., greater than 0.1 inch rainfall) storm event. All samples are to be grab samples taken within thirty (30) minutes of the initiation of the discharge from the outfall(s) where practicable, but in no case later than within the first hour of discharge from the outfall(s). A report stating that there was no discharge shall be submitted when there is no storm event, and subsequently no discharge, during the reporting period.

2. Samples taken in compliance with the monitoring requirements specified above shall be representative of the discharge and taken prior to comingling with the Weymouth Fore River.

3. Sampling frequency of quarterly is defined as the sampling of one (1) storm event (as defined above in Footnote 1) in each quarter. Quarters are defined as the interval of time between the months of: January through March, inclusive; April through June, inclusive; July through September, inclusive; and October through December, inclusive.

4. Required for State Certification.

5. The benchmark concentration for Nitrate plus Nitrite (Nitrogen) is 0.68 mg/l, as identified in EPA's 2008 Storm Water Multi-Sector General Permit (MSGP) for Industrial Activities.

6. The benchmark concentration for Total Zinc is 0.095 mg/l, based on the National Recommended Water Quality Criteria.

7. See Part I.B.6.

PART I.A. (continued)

2. During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge **non-contact cooling water** from **outfall 003** to the Town River. Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	**Units**	**Discharge Limitation**		**Monitoring Requirement[1]**	
		Average Monthly	**Maximum Daily**	**Measurement Frequency**	**Sample Type**
Flow Rate[2]	MGD	5.0	5.0	1 / Month	Estimate
pH[3]	s.u.	6.5-8.5 range (See Part I.A.3.b. Page 5)		1 / Month	Grab
Effluent Temperature	°F	Report	87[4]	Continuous	Recorder

1. Samples taken in compliance with the above monitoring requirements shall be taken prior to comingling with the receiving water and shall be free from storm water and/or tidal influence.

2. Flow rate, which is to be reported in units of million gallons per day (MGD), shall represent the total flow on the sample day.

3. Required for State Certification.

4. The effluent shall not exceed 87°F as an instantaneous maximum temperature.

PART I.A. (continued)

3.

a. The discharges either individually or in combination shall not cause a violation of State Water Quality Standards of the receiving waters which have been or may be promulgated.

b. The pH of the effluent shall be neither less than 6.5 nor greater than 8.5 at any time, unless these values are exceeded due to natural causes.

c. The discharge shall not cause an objectionable discoloration of the receiving waters.

d. The effluent shall contain neither visible oil sheen, foam, nor floating solids at any time.

e. The discharges shall not contain materials in concentrations or combinations which are hazardous or toxic to human health, aquatic life of the receiving surface waters or which would impair the uses designated by its classification.

f. The discharges shall not impart color, taste, turbidity, toxicity, radioactivity or other properties which cause those waters to be unsuitable for the designated uses and characteristics ascribed to their use.

g. The use of biocides or other chemical additives in non-contact cooling water is prohibited.

h. Notwithstanding specific conditions of this permit, the effluent must not lower the quality of any classified body of water below such classification, or lower the existing quality of any body of water if the existing quality is higher than the classification.

i. The results of sampling for any parameter above its required frequency must also be reported, in accordance with 40 CFR §122.41(l)(4)(ii).

j. The permittee shall report to EPA-New England and MassDEP **120 days prior to the initiation of any facility changes** that would alter the non-contact cooling water systems from which the Outfall 003 discharge is derived, as such changes may require a permit modification.

k. EPA may modify this permit in accordance with EPA regulations in 40 CFR §122.62 and §122.63 to incorporate more stringent effluent limitations, increase the frequency of analyses, or impose additional sampling and analytical requirements.

4. This permit shall be modified, or revoked and reissued to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:

a. contains different conditions or is otherwise more stringent than any effluent limitation in this permit; or

b. controls any pollutant not limited by this permit.

If the permit is modified or reissued, it shall be revised to reflect all currently applicable requirements of the Act.

5. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe (40 CFR §122.42):

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(i) One hundred micrograms per liter (100 μg/l);

(ii) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR §122.21(g)(7); or

(iii) Any other notification level established by the Director in accordance with 40 CFR §122.44(f) and Massachusetts regulations.

b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(i) Five hundred micrograms per liter (500 μg/l);

(ii) One milligram per liter (1 mg/l) for antimony;

(iii) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR §122.21(g)(7); or

(iv) Any other notification level established by the Director in accordance with 40 CFR §122.44(f) and Massachusetts regulations.

c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

6. Toxics Control

a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.

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

7. Numerical Effluent Limitations for Toxicants

EPA or MassDEP may use the results of the toxicity tests and chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to Section 304(a)(1) of the Clean Water Act (CWA), state water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including but not limited to those pollutants listed in Appendix D of 40 CFR Part 122.

B. STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

1. The permittee shall develop, implement, and maintain a Stormwater Pollution Prevention Plan (SWPPP) designed to reduce, or prevent, the discharge of pollutants in stormwater to the receiving waters identified in this permit. The SWPPP shall be a written document that is consistent with the terms of this permit. Additionally, the SWPPP shall serve as a tool to document the permittee's compliance with the terms of this permit. Development guidance and a recommended format for the SWPPP are available on the EPA website for the Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activities (http://cfpub.epa.gov/npdes/stormwater/msgp.cfm).

2. The SWPPP shall be completed or updated and certified by the permittee within 90 days after the effective date of this permit. The permittee shall certify that its SWPPP has been completed or updated and that it reduces the pollutants discharged in stormwater to the extent practicable. The certification shall be signed in accordance with the requirements identified in 40 CFR §122.22. A copy of this initial certification shall be sent to EPA and MassDEP within one hundred and twenty (120) days of the effective date of this permit.

3. The SWPPP shall be prepared in accordance with good engineering practices and shall be consistent with the general provisions for SWPPPs included in the most current version of the MSGP. In the current MSGP (effective May 27, 2009), the general SWPPP provisions are included in Part 5. Specifically, the SWPPP shall document the selection, design, and installation of control measures and contain the elements listed below:

   a. A pollution prevention team with collective and individual responsibilities for developing, implementing, maintaining, revising and ensuring compliance with the SWPPP;
   b. A site description which includes: the activities at the facility; a general location map showing the facility, receiving waters, and outfall locations; and a site map showing the extent of significant structures and impervious surfaces, direction of stormwater flows, and location of all existing structural control measures, stormwater conveyances, pollutant sources (identified in Part 3.c. below), stormwater monitoring points,

stormwater inlets and outlets, and industrial activities exposed to precipitation such as, storage, disposal, material handling;
c. A summary of all pollutant sources which includes a list of activities exposed to stormwater, the pollutants associated with these activities, a description of where spills have occurred or could occur, a description of non-stormwater discharges, and a summary of any existing stormwater discharge sampling data;
d. A description of all stormwater controls, both structural and non-structural; and,
e. A schedule and procedure for implementation and maintenance of the control measures described above and for the quarterly inspections and best management practices (BMPs) described below.

4. The SWPPP shall document the appropriate best management practices (BMPs) implemented or to be implemented at the facility to minimize the discharge of pollutants in stormwater to waters of the United States and satisfy the non-numeric technology-based effluent limitations included in this permit. At a minimum, these BMPs shall be consistent at least with the control measures described in the most current version of the MSGP. In the current MSGP (effective May 27, 2009), these control measures are described in Part 2.1.2. Specifically, BMPs must be selected and implemented to satisfy the following non-numeric technology-based effluent limitations:

   a. Minimizing exposure of manufacturing, processing, and material storage areas to stormwater discharges;
   b. Good housekeeping measures designed to maintain areas that are potential sources of pollutants;
   c. Preventative maintenance programs to avoid leaks, spills, and other releases of pollutants in stormwater discharged to receiving waters;
   d. Spill prevention and response procedures to ensure effective response to spills and leaks if or when they occur;
   e. Erosion and sediment controls designed to stabilize exposed areas and contain runoff using structural and/or non-structural control measures to minimize onsite erosion and sedimentation, and the resulting discharge of pollutants;
   f. Runoff management practices to divert, infiltrate, reuse, contain, or otherwise reduce stormwater runoff; and,
   g. Proper handling procedures for salt or materials containing chlorides that are used for snow and ice removal.

5. All areas with industrial materials or activities exposed to stormwater and all structural control measures used to comply with the effluent limits in this permit shall be inspected, at least once per quarter, by qualified personnel with one or more members of the stormwater pollution prevention team. Inspections shall begin during the 1st full quarter after the effective date of this permit. EPA considers quarters as follows: January to March; April to June; July to September; and October to December. Each inspection must include a visual assessment of stormwater samples (from each outfall), which shall be collected within the first 30 minutes of discharge from a storm event, stored in a clean, clear glass or plastic container, and examined in a well-lit area for the following water quality characteristics: color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other

obvious indicators of pollution. The permittee shall document the following information for each inspection and maintain the records along with the SWPPP:

a. The date and time of the inspection and at which any samples were collected;
b. The name(s) and signature(s) of the inspector(s)/sample collector(s);
c. If applicable, why it was not possible to take samples within the first 30 minutes;
d. Weather information and a description of any discharges occurring at the time of the inspection;
e. Results of observations of stormwater discharges, including any observed discharges of pollutants and the probable sources of those pollutants;
f. Any control measures needing maintenance, repairs or replacement; and,
g. Any additional control measures needed to comply with the permit requirements.

6. The permittee shall conduct quarterly benchmark monitoring of nitrogen (nitrate plus nitrite) and total recoverable zinc. Benchmark monitoring data are primarily to determine the overall effectiveness of control measures.

   a. After collection of four (4) quarterly samples, if the average of the 4 monitoring values for either parameter does not exceed the benchmark, you have fulfilled your monitoring requirements for that parameter for the permit term. For averaging purposes, use a value of zero for any individual sample parameter which is determined to be less than the method detection limit. For sample values that fall between the method detection level and the quantitation limit (i.e., confirmed detection but below the level that can be reliably quantified), use a value halfway between zero and the quantitation limit.
   b. If the average of four (4) monitoring values for a parameter in any calendar year exceeds the benchmark concentration, the permittee shall review the selection, design, installation, and implementation of all BMPs and control measures in the SWPPP, and make necessary modifications until the running four (4) quarter average for the parameter no longer exceeds the benchmark concentrations. The permittee must make necessary modifications immediately, without waiting for results from a full 4 quarters of monitoring data, if an exceedance of the 4 quarter average in any year is mathematically certain.

7. The permittee shall amend and update the SWPPP within 14 days of any changes at the facility that result in a significant effect on the potential for the discharge of pollutants to the waters of the United States. Such changes may include, but are not limited to: a change in design, construction, operation, or maintenance, materials storage, or activities at the facility; a release of a reportable quantity of pollutants as described in 40 CFR §302; or a determination by the permittee or EPA that the BMPs included in the SWPPP appear to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with industrial activity.

8. Any amended, modified, or new versions of the SWPPP shall be re-certified and signed by the permittee in accordance with the requirements identified in 40 CFR §122.22. The permittee shall also certify, at least annually, that the previous year's inspections and maintenance activities were conducted, results recorded, records maintained, and that the

facility is in compliance with this permit. If the facility is not in compliance with any aspect of this permit, the annual certification shall state the non-compliance and the remedies which are being undertaken. Such annual certifications also shall be signed in accordance with the requirements identified in 40 CFR §122.22. The permittee shall maintain at the facility a copy of its current SWPPP and all SWPPP certifications (the initial certification, re-certifications, and annual certifications) signed during the effective period of this permit, and shall make these available for inspection by EPA and MassDEP. In addition, the permittee shall document in the SWPPP any violation of numerical or non-numerical stormwater effluent limits with a date and description of the corrective actions taken.

C. UNAUTHORIZED DISCHARGES

This permit authorizes the permittee to discharge only in accordance with the terms and conditions of this permit and only from outfalls listed in Parts I A.1. and I.A.2. of this permit. Discharges of wastewater from any other point sources which are not authorized by this permit or other NPDES permits shall be reported in accordance with Section D.1.e. (1) of the Standard Conditions of this permit (Twenty-four hour reporting).

D. BEST TECHNOLOGY AVAILABLE

1. The location, design, construction, and capacity of the permittee's non-contact cooling water intake structure (CWIS) shall reflect the best technology available (BTA) for minimizing the adverse environmental impacts from entrainment of fish eggs and larvae. In order to satisfy this BTA requirement, the permittee shall operate the CWIS in compliance with the following specifications:

   a. The permittee shall operate variable frequency drive pumps to limit the CWIS intake to a maximum daily flow of 5 MGD. In addition, the permittee shall, to the extent practicable, optimize the use of the variable frequency drive pumps to withdraw only the minimum amount of once-through cooling water necessary to meet the facility's daily cooling demands.

   b. The permittee shall continue to operate the existing wet mechanical draft cooling towers with make-up water supplied by municipal sources to reduce the need for once-through cooling water withdrawal from the River.

   c. The permittee shall limit the CWIS capacity to the maximum extent practicable by scheduling maintenance outages between February 15th and June 30th to coincide with periods of high abundance of fish eggs and larvae. The permittee shall report the dates of all scheduled outages and submit them to EPA and MassDEP along with the subsequent monthly DMR, and, for maintenance outages not scheduled between February 15th and June 30th, describe why it was not practicable for the outage to occur within this time period.

2. The location, design, construction, and capacity of the permittee's CWIS shall reflect the BTA for minimizing the adverse environmental impacts from the impingement of aquatic

organisms. In order to satisfy this BTA requirement, the permittee shall i) maintain the existing mid-depth location of the intake, and ii) install and operate an exclusion technology through which all cooling water is filtered. This exclusion technology shall have an opening size no more than 10 mm at the widest point and a through-screen velocity no greater than 0.5 fps. A measurement of the opening size at the widest point and calculation or measurement of through-screen velocity shall be provided to EPA and MassDEP prior to operation of any exclusion technology.

3. The permittee shall notify EPA and MassDEP of any change in the location, design, or capacity of the intake structures outside of the specifications of this Permit, as such changes may require a permit modification. The design of the intake structures shall be reviewed for conformity to applicable regulations pursuant to Section 316(b) of the CWA when such regulations are promulgated.

E. AMBIENT AND MIXING ZONE TEMPERATURE MONITORING

1. The permittee shall collect temperature readings from the Town River Bay during seven consecutive days in March and seven consecutive days of August using an array of thermistors at the following locations and depths (also see Permit Attachment A):

   - Five thermistors at one meter depth approximately equally spaced along a transect adjacent to the pier north of the property. The first thermistor shall be located at the westernmost end of the pier and fifth thermistor shall be located at the northwest corner of the dock.
   - Four thermistors approximately equally spaced along a transect that runs from the westernmost end of the pier to the opposite shoreline adjacent to the property. Thermistors at this location may be exposed at some tidal ranges.
   - One thermistor at one meter depth at the eastern end of one of the boat docks located closest to the discharge point at the Bay Pointe Marina as a measure of ambient river temperature.

2. Each thermistor shall be equipped with a data logging device to allow the development of a continuous data record with temperatures recorded at 15-minute intervals. The permittee is solely responsible for gaining all permits and authorizations necessary for the placement of the thermistors in the Town River Bay. Samples must be collected during times that the facility is discharging from Outfall 003. The results of this study shall be submitted to EPA and MassDEP as part of the subsequent monthly DMR submission.

F. ENTRAINMENT SAMPLING

1. The Permittee shall conduct entrainment sampling once (1) per week between February 15 and June 30th for two years. At a minimum, the sampling program shall address the following:

   a. During consecutive weeks, collection of samples shall alternate between daylight hours and night hours from the intake pipe prior to entry to the pump. Sampling shall be

conducted using a 0.333 millimeter mesh 60-centimeter plankton net. The volume of water sampled shall be measured and equal to approximately 100 cubic meters (m^3). A standard mesh of 0.202 mm shall be required during the period of highest abundance of early stage winter flounder (late March to late April).

b. In the laboratory, all eggs and larvae shall be identified to the lowest practical taxa and counted. At a minimum, all specimens of winter flounder, smelt, tomcod, and cunner shall be identified. Subsampling with a plankton splitter shall be used if the count of eggs and larvae in a sample is greater than 400 organisms so that a minimum of 200 eggs and larvae will be present in any subsample.

c. Larval winter flounder shall be enumerated into different life stages using the following criteria:

Stage 1: Yolk sac present or eyes not pigmented (yolk-sac larvae)
Stage 2: Eyes pigmented, no yolk-sac present, no fin ray development, and no flexion of the notochord.
Stage 3: Fin rays present and flexion of the notochord has begun, but left eye has not migrated to the midline.
Stage 4: Left eye has reached midline, but full fin ray complement has not yet been attained.
Stage 5: Transformation to the juvenile stage is complete and intense pigmentation present near the base of the caudal fin.

2. Using the results of the entrainment sampling program, the permittee shall calculate:

a. Entrainment estimates for winter flounder and rainbow smelt as follows:

i) Estimate the density of larvae in each sample (D_S) by dividing the number of larvae in the sample by the volume of water in the sample.
ii) Estimate the total entrainment for each week (E_W) by multiplying the density of larvae in the sample for a given week (Ds) by the volume of water pumped by the facility during that week.
iii) Estimate the total entrainment for February through June (E_T) by summing the weekly entrainment estimates ($\sum E_W$).

b. Annual larval entrainment estimates shall be converted to adult equivalents for species in which regionally specific larval survival rates are available. The staged enumeration of winter flounder shall be used in estimating adult equivalents for this species.

3. Results of the entrainment monitoring shall be reported in a CWIS Biological Monitoring Report following each year of the study, which shall include monitoring logs and raw data collected in the previous year and summarize the data both graphically, where appropriate, and in text. The monitoring report shall also include the results of all calculations conducted in accordance with Part I.F.2. The CWIS Biological Monitoring Report shall be submitted to EPA and MassDEP by February 28th.

G. MONITORING AND REPORTING

Monitoring results obtained during each calendar month shall be summarized and reported on Discharge Monitoring Report Form(s) postmarked **no later than the 15th day of the following month.**

Signed and dated originals of these, and all other reports required herein, shall be submitted to the Director and the State at the following addresses:

Environmental Protection Agency
Water Technical Unit (OES04-SMR)
5 Post Office Square – Suite 100
Boston, Massachusetts 02109-3912

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention
Northeast Regional Office
205B Lowell Street
Wilmington, Massachusetts 01887

In addition, copies of all Discharge Monitoring Reports required by this permit shall also be submitted to the State at following address:

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

H. STATE PERMIT CONDITIONS

This Discharge Permit is issued jointly by the U. S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) under Federal and State law, respectively. As such, all the terms and conditions of this Permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MassDEP pursuant to M.G.L. Chap. 21, §43.

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

Agency. In the event this Permit is declared invalid, illegal or otherwise issued in violation of Federal law, this Permit shall remain in full force and effect under State law as a Permit issued by the Commonwealth of Massachusetts.

Attachment A
Approximate Locations for Transects of Thermistors in the Ambient Temperature and Mixing Zone Study

Transect A: Adjacent to the pier north of the property. The first thermistor shall be located at the westernmost end of the pier and fifth thermistor shall be located at the northwest corner of the dock.

Transect B: From the westernmost end of the pier to the opposite shoreline adjacent to the property. Thermistors at this location may be exposed at some tidal ranges.

Ambient Monitor: At the eastern end of one of the boat docks located closest to the discharge point at the Bay Pointe Marina.