



RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

235 Promenade Street, Providence, RI 02908-5767

TDD 401-222-4462

July 27, 2011

CERTIFIED MAIL

Mr. Stephen Morin
Director of Environmental Health and Safety
Brown University
164 Angell Street
Box 1914
Providence, RI 02912

RE: Brown University Combined Discharge from the Creative Arts Center and Brown University Office Building - RIPDES Permit No. RI0023892 and Remediation General Permit Authorization No. RIG85C003

Dear Mr. Morin:

Enclosed is your final individual Rhode Island Pollutant Discharge Elimination System (RIPDES) Permit issued pursuant to the referenced application. State regulations, promulgated under Chapter 46-12 of the Rhode Island General Laws of 1956, as amended, require this permit to become effective on the date specified in the permit which is October 1, 2011. Enclosed is information relative to hearing requests and stays of RIPDES Permits.

Also enclosed is your final RIPDES Remediation General Permit Termination issued in response to your February 28, 2011 request submitted by GZA GeoEnvironmental, Inc. on behalf of Brown University. State regulations, promulgated under Chapter 46-12 of the Rhode Island General Laws of 1956, as amended, require this permit termination to become effective on the date specified in the attached permit termination which is October 1, 2011.

We appreciate your cooperation throughout the development of the individual permit. Should you have any questions concerning this permit or the associated Remediation General Permit termination, feel free to contact Brian Lafaille, P.E. of the State Permits Staff at (401) 222-4700, extension 7731.

Sincerely,

for Eric A. Beck, P.E.
Supervising Sanitary Engineer

EAB:bd1

Enclosures

cc: Traci Pena, RIDEM-OWR (electronic copy via email)
Annie McFarland, RIDEM-OWR (electronic copy via email)
Paula Jean Therrien, RIDEM-OWM (electronic copy via email)
Henry Huppert, Brown University (electronic copy via email)
Albert Flori, GZA (electronic copy via email)

Office of Water Resources/Telephone: 401.222.4700/Fax: 401.222.6177



RESPONSE TO COMMENTS

NO SIGNIFICANT COMMENTS WERE RECEIVED ON THE DRAFT PERMIT FOR THIS FACILITY; THEREFORE, NO RESPONSE WAS PREPARED.

HEARING REQUESTS

If you wish to contest any of the provisions of this permit, you may request a formal hearing within thirty (30) days of receipt of this letter. The request should be submitted to the Administrative Adjudication Division at the following address:

Bonnie Stewart, Clerk
Department of Environmental Management
Office of Administrative Adjudication
One Capitol Hill
Second Floor
Providence, Rhode Island 02903

Any request for a formal hearing must conform to the requirements of Rule 49 of the State Regulations.

STAYS OF RIPDES PERMITS

Should the Department receive and grant a request for a formal hearing, this permit will not be effective pending final Departmental action, unless an order authorizing operation is obtained from the Administrative Hearing Officer, in accordance with the provisions of Rule 50.

TERMINATION
AUTHORIZATION TO DISCHARGE UNDER THE
RHODE ISLAND POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of Chapter 46-12 of the Rhode Island General Laws, as amended,

Brown University
164 Angell Street, Box 1914
Providence, RI 02912

is no longer authorized to discharge from a facility located at

Creative Arts Center & Brown University Office Building
154 & 164 Angell Street
Providence, RI 02912

to receiving waters named

Providence River

All effluent limitations, monitoring requirements and other conditions in the original permit are no longer in effect.

This termination shall become effective on October 1, 2011.

This terminates the permit issued on May 26, 2010.

This termination consists of 1 page.

Signed this 27th day of July, 2011.



Eric A. Beck, P.E.
Supervising Sanitary Engineer
Office of Water Resources
Rhode Island Department of Environmental Management

AUTHORIZATION TO DISCHARGE UNDER THE
RHODE ISLAND POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of Chapter 46-12 of the Rhode Island General Laws, as amended,

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to receiving waters named

Providence River

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

This permit shall become effective on October 1, 2011.

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

This permit consists of seven (7) pages in Part I including effluent limitations, monitoring requirements, etc. and ten (10) pages in Part II including General Conditions.

Signed this *27th* day of *July*, 2011.



Angelo S. Liberti, P.E., Chief of Surface Water Protection
Office of Water Resources
Rhode Island Department of Environmental Management
Providence, Rhode Island

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date of this permit and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 001A. Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>					<u>Monitoring Requirement</u>	
	<u>Quantity - lbs./day</u>		<u>Concentration - specify units</u>			<u>Measurement Frequency</u>	<u>Sample Type</u>
	<u>Average Monthly</u>	<u>Maximum Daily</u>	<u>Average Monthly</u> *(<u>Minimum</u>)	<u>Average Weekly</u> *(<u>Average</u>)	<u>Maximum Daily</u> *(<u>Maximum</u>)		
Flow	--- gpm	10.0 gpm				Continuous ¹	Recorder
Total Petroleum Hydrocarbons			--- ug/l		1000 ug/l	2/Month	Grab
Benzene			5 ug/l		5 ug/l	2/Month	Grab
Toluene			12,000 ug/l		--- ug/l	2/Month	Grab
Ethylbenzene			1,680 ug/l		--- ug/l	2/Month	Grab
Total Xylenes (m,p,o)			--- ug/l		--- ug/l	2/Month	Grab
Total BTEX			100 ug/l		100 ug/l	2/Month	Grab
Methyl-t-Butyl-Ether (MTBE)			--- ug/l		70 ug/l	2/Month	Grab
Tert-Amyl Methyl Ether			--- ug/l		--- ug/l	2/Month	Grab

¹ Monitor flow and submit a flow log with the monitoring results. The flow log shall include the rate and duration of flow including the time(s) of day when flow commences and ceases. At a minimum the flow must be reported each time a sample is collected.

--- Signifies a parameter that must be monitored and data must be reported; no limit has been established at this time.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the effluent of the groundwater treatment system, after the final carbon treatment unit, which is designated as Outfall 001A. The two (2) grab samples taken per month shall be separated by a minimum of ten (10) days.

2.
 - a. The pH of the effluent shall not be less than 6.5 nor greater than 8.5 standard units at any time, unless these values are exceeded due to natural causes or as a result of the approved treatment processes.
 - b. The discharge shall not cause visible discoloration of the receiving waters.
 - c. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.
3. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:
 - a. That any activity has occurred or will occur which would result in the discharge, on a routine 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":
 - (1) One hundred micrograms per liter (100 ug/l);
 - (2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitro-phenol; and one milligram per liter (1 mg/l) for antimony;
 - (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. s122.21(g)(7); or
 - (4) Any other notification level established by the Director in accordance with 40 C.F.R. s122.44(f) and Rhode Island 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":
 - (1) Five hundred micrograms per liter (500 ug/l);
 - (2) One milligram per liter (1 mg/l) for antimony;
 - (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. s122.21(g)(7); or
 - (4) Any other notification level established by the Director in accordance with 40 C.F.R. s122.44(f) and Rhode Island Regulations.
 - c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or by-product any toxic pollutant, which was not reported in the permit application.

4. The permittee shall at all times properly operate and maintain the groundwater recovery/treatment system. Notification of mechanical failure or breakthrough of the treatment system (exceedance of any permit limits) shall be reported to the Office of Water Resources within one (1) business day of either the mechanical failure or receiving the analytical results indicating the exceedance. If any of the contaminants are found in the effluent (Outfall 001A) above the limits listed in Part I.A.1 the notification shall include a summary of the total flow, operation and maintenance activities, and any recent laboratory results. Written documentation of the notification required above shall be submitted to the Office of Water Resources within five (5) days along with a description of the corrective actions which were taken to resolve the non-compliant status. At a minimum, the corrective actions shall include the replacement of the activated carbon filters. If any of the pollutants listed in Part I.A.1 of the permit are found in the midfluent (between the second and third carbon vessels) above the applicable permit limits the first and second activated carbon filters shall be replaced within twenty-four (24) hours of receiving the analytical results indicating the exceedance.
5. The permittee shall treat all groundwater pumped at the site using the treatment system described in the RIPDES permit application. The permittee may not modify the treatment system without prior written approval from the Office of Water Resources.
6. The treatment system shall be inspected a minimum of twice per month to assure the system is operating properly and to look for evidence of iron bacteria build-up. As a result of these or any other inspections, appropriate action shall be taken, as soon as practicable, to resolve any problems discovered during an inspection. Records documenting inspections and any actions taken (i.e. changing carbon) shall be retained and made available upon request to the Office of Water Resources.
7. This permit serves as the State's Water Quality Certificate for the discharges described herein.

B. DETECTION LIMITS

The permittee shall assure that all wastewater testing required by this permit, is performed in conformance with the method detection limits listed below. In accordance with 40 CFR Part 136, EPA approved analysis techniques, quality assurance procedures and quality control procedures shall be followed for all reports required to be submitted under the RIPDES program. These procedures are described in "Methods for the Determination of Metals in Environmental Samples" (EPA/600/4-91/010) and "Methods for Chemical Analysis of Water and Wastes" (EPA/600/4-79/020).

The report entitled "Methods for the Determination of Metals in Environmental Samples" includes a test which must be performed in order to determine if matrix interferences are present, and a series of tests to enable reporting of sample results when interferences are identified. Each step of the series of tests becomes increasingly complex, concluding with the complete Method of Standard Additions analysis. The analysis need not continue once a result which meets the applicable quality control requirements has been obtained. Documentation of all steps conducted to identify and account for matrix interferences shall be documented and maintained onsite.

If, after conducting the complete Method of Standard Additions analysis, the laboratory is unable to determine a valid result, the laboratory shall report "could not be analyzed". Documentation supporting this claim shall be maintained onsite. If valid analytical results are repeatedly unobtainable, DEM may require that the permittee determine a method detection limit (MDL) for their effluent or sludge as outlined in 40 CFR Part 136, Appendix B.

When calculating sample averages for reporting on discharge monitoring reports (DMRs):

1. "could not be analyzed" data shall be excluded, and shall not be considered as failure to comply with the permit sampling requirements;
2. results reported as less than the MDL shall be reported in accordance with the DEM's DMR Instructions.

Therefore, all sample results shall be reported as: an actual value, "could not be analyzed", or zero. The effluent or sludge specific MDL must be calculated using the methods outlined in 40 CFR Part 136, Appendix B. Samples which have been diluted to ensure that the sample concentration will be within the linear dynamic range shall not be diluted to the extent that the analyte is not detected. If this should occur the analysis shall be repeated using a lower degree of dilution.

The MDL for a given analyte may vary with the type of sample. MDLs which are determined in reagent water may be lower than those determined in wastewater due to fewer matrix interferences. Wastewater is variable in composition and may therefore contain substances (interferents) that could affect MDLs for some analytes of interest. Variability in instrument performance can also lead to inconsistencies in determinations of MDLs.

To help verify the absence of matrix or chemical interference the analyst is required to complete specific quality control procedures. For the metals analyses listed above the analyst must withdraw from the sample two equal aliquots; to one aliquot add a known amount of analyte, and then dilute both to the same volume and analyze. The unspiked aliquot multiplied by the dilution factor should be compared to the original. Agreement of the results within 10% indicates the absence of interference. Comparison of the actual signal from the spiked aliquot to the expected response from the analyte in an aqueous standard should help confirm the finding from the dilution analysis. (Methods for Chemical Analysis of Water and Wastes EPA-600/4-79/020).

For organic pollutants the laboratory must on an ongoing basis, spike at least 5% of the samples from each sample site being monitored. For laboratories analyzing 1 to 20 samples per month, at least one spiked sample per month is required. The spike should be at the discharge permit limit or 1 to 5 times higher than the background concentration determined in Section 8.3.2, whichever concentration would be larger. (40 CFR Part 136 Appendix B Method 624 and 625 subparts 8.3.1 and 8.3.11).

OTHER TOXIC POLLUTANTS

	MDL ug/l (ppb)
Antimony, Total	5.0
Arsenic, Total	5.0
Beryllium, Total	0.2
Cadmium, Total	1.0
Chromium, Total	5.0
Chromium, Hexavalent	20.0
Copper, Total	20.0
Lead, Total	3.0
Mercury, Total	0.5
Nickel, Total	10.0
Selenium, Total	5.0
Silver, Total	1.0
Thallium, Total	5.0
Zinc, Total	20.0
Asbestos	**
Cyanide, Total	10.0
Phenols, Total	50.0
TCDD	**
MTBE (Methyl Tert Butyl Ether)	1.0

* Polynuclear Aromatic Hydrocarbons

** No Rhode Island Department of Environmental Management (RIDEM) MDL

C. MONITORING AND REPORTING

1. Monitoring

All monitoring required by this permit shall be done in accordance with sampling and analytical testing procedures specified in Federal Regulations (40 CFR Part 136) or the following alternative methods:

- a. For measuring volatile compounds, Method 8260C (or most recent version) may be used as a substitute for CWA Methods 524.2, 602, 624, or 1624.
- b. For measuring semivolatile compounds, Method 8270D (or the most recent version) may be used as a substitute for Methods 610, 625, and 1625.
- c. Any use of Method 8260C or Method 8270D must be accompanied by documented quality assurance/quality control (QA/QC) test results to prove that the analytical process can achieve the lower detection limits of the alternative methods.

2. Reporting

Monitoring results obtained during the previous quarter shall be summarized and reported on Discharge Monitoring Report (DMR) Forms, postmarked no later than the 15th day of the month following the completed quarter as follows:

<u>Quarter Testing to be Performed</u>	<u>Report Due No Later Than</u>	<u>Results Submitted on DMR for</u>
January 1 – March 31	April 15	January 1 – March 31
April 1- June 30	July 15	April 1 - June 30
July 1 – September 30	October 15	July 1 – September 30
October 1 – December 31	January 15	October 1 – December 31

The first report is due on January 15, 2012.

Signed copies of these, and all other reports required herein, shall be submitted to:

RIPDES Program
Rhode Island Department of Environmental Management
235 Promenade Street
Providence, Rhode Island 02908

PART II
TABLE OF CONTENTS

GENERAL REQUIREMENTS

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- (b) Duty to Reapply
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- (d) Duty to Mitigate
- (e) Proper Operation and Maintenance
- (f) Permit Actions
- (g) Property Rights
- (h) Duty to Provide Information
- (i) Inspection and Entry
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- (k) Signatory Requirements
- (l) Reporting Requirements
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- (n) Upset
- (o) Change in Discharge
- (p) Removed Substances
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- (w) Confidentiality of Information
- (x) Best Management Practices
- (y) Right of Appeal

DEFINITIONS

(e) Proper Operation and Maintenance

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 this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures, and, where applicable, compliance with DEM "Rules and Regulations Pertaining to the Operation and Maintenance of Wastewater Treatment Facilities" and "Rules and Regulations Pertaining to the Disposal and Utilization of Wastewater Treatment Facility Sludge." This provision requires the operation of back-up or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of the permit.

(f) Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause, including but not limited to: (1) Violation of any terms or conditions of this permit; (2) Obtaining this permit by misrepresentation or failure to disclose all relevant facts; or (3) A change in any conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(g) Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

(h) Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

(i) Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

- (1) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- (2) Have access to and copy, at reasonable times any records that must be kept under the conditions of this permit;
- (3) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit; and

(k) Signatory Requirement

All applications, reports, or information submitted to the Director shall be signed and certified in accordance with Rule 12 of the Rhode Island Pollutant Discharge Elimination System (RIPDES) Regulations. Rhode Island General Laws, Chapter 46-12 provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than \$5,000 per violation, or by imprisonment for not more than 30 days per violation, or by both.

(l) Reporting Requirements

- (1) Planned changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.
- (2) Anticipated noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with the permit requirements.
- (3) Transfers. This permit is not transferable to any person except after written notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under State and Federal law.
- (4) Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.
- (5) Twenty-four hour reporting. The permittee shall immediately report any noncompliance which may endanger health or the environment by calling DEM at (401) 222-3961, (401) 222-6519 or (401) 222-2284 at night.

A written submission shall also be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

The following information must be reported immediately:

- (i) Any unanticipated bypass which causes a violation of any effluent limitation in the permit; or
- (ii) Any upset which causes a violation of any effluent limitation in the permit; or
- (iii) Any violation of a maximum daily discharge limitation for any of the pollutants specifically listed by the Director in the permit.

The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

- (ii) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph (3)(i) of this section.

(n) Upset

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

- (1) Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph (2) of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

- (2) Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

- (a) An upset occurred and that the permittee can identify the cause(s) of the upset;
- (b) The permitted facility was at the time being properly operated;
- (c) The permittee submitted notice of the upset as required in Rule 14.18 of the RIPDES Regulations; and
- (d) The permittee complied with any remedial measures required under Rule 14.05 of the RIPDES Regulations.

- (3) Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

(o) Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. Discharges which cause a violation of water quality standards are prohibited. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different or increased discharges of pollutants must be reported by submission of a new NPDES application at least 180 days prior to commencement of such discharges, or if such changes will not violate the effluent limitations specified in this permit, by notice, in writing, to the Director of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

(u) Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

(v) Reopener Clause

The Director reserves the right to make appropriate revisions to this permit in order to incorporate any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the CWA or State law. In accordance with Rules 15 and 23 of the RIPDES Regulations, if any effluent standard or prohibition, or water quality standard is promulgated under the CWA or under State law which is more stringent than any limitation on the pollutant in the permit, or controls a pollutant not limited in the permit, then the Director may promptly reopen the permit and modify or revoke and reissue the permit to conform to the applicable standard.

(w) Confidentiality of Information

(1) Any information submitted to DEM pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, DEM may make the information available to the public without further notice.

(2) Claims of confidentiality for the following information will be denied:

- (i) The name and address of any permit applicant or permittee;
- (ii) Permit applications, permits and any attachments thereto; and
- (iii) NPDES effluent data.

(x) Best Management Practices

The permittee shall adopt Best Management Practices (BMP) to control or abate the discharge of toxic pollutants and hazardous substances associated with or ancillary to the industrial manufacturing or treatment process and the Director may request the submission of a BMP plan where the Director determines that a permittee's practices may contribute significant amounts of such pollutants to waters of the State.

(y) Right of Appeal

Within thirty (30) days of receipt of notice of a final permit decision, the permittee or any interested person may submit a request to the Director for an adjudicatory hearing to reconsider or contest that decision. The request for a hearing must conform to the requirements of Rule 49 of the RIPDES Regulations.

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
235 PROMENADE STREET
PROVIDENCE, RHODE ISLAND 02908

STATEMENT OF BASIS

RHODE ISLAND POLLUTANT DISCHARGE ELIMINATION SYSTEM (RIPDES) PERMIT TO DISCHARGE TO WATERS OF THE STATE

RIPDES PERMIT NO. **RI0023892**

NAME AND ADDRESS OF APPLICANT:

Brown University
164 Angell Street, Box 1914
Providence, RI 02912

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Creative Arts Center & Brown University Office Building
154 & 164 Angell Street
Providence, RI 02912

RECEIVING WATER: **Providence River**

CLASSIFICATION: **SB1{a}**

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

The above named applicant has applied to the Rhode Island Department of Environmental Management (DEM) for issuance of a RIPDES Permit to discharge into the designated receiving water. The purpose of this permit is to authorize Brown University to treat and discharge contaminated groundwater from the foundation drainage systems of the Creative Arts Center (CAC) at 154 Angell Street and the Brown Office Building (BOB) at 164 Angell Street in Providence, RI. The existing treatment system currently discharges to the public storm water drainage system on Angell Street which ultimately discharges to Providence Harbor. Prior to seeking coverage under this individual permit Brown University has been operating the treatment system in accordance with the RIPDES Remediation General Permit (RGP) under RIPDES Authorization No. RIG85C003. In a letter dated February 28, 2011, Brown University requested to be excluded from coverage under the RGP and provided an individual RIPDES permit application for the discharge.

II. Limitations and Conditions

The effluent limitations of the permit, the monitoring requirements, and any implementation schedule (if required) may be found in the draft permit. A summary of historic effluent data may be found in *Attachment A*.

III. Permit Basis and Explanation of Effluent Limitation Derivation

Brown University completed the construction of the CAC building and associated foundation drainage system on property formerly occupied by a Shell Gasoline Service Station. This sub-slab foundation drainage system abuts the foundation drainage system for the BOB, which is located immediately to the east and hydraulically down gradient of the CAC. The drainage systems intercept groundwater which had been impacted by a gasoline release, which was identified in December 2005, from the former Shell Station. Brown University received approval from the DEM to treat the foundation drainage water from these two buildings in one system, with one point of discharge to the public storm water drainage system, rather than the previous use of two separate systems. Operation of the combined system began on June 15, 2010, with the treatment system components installed within the BOB. Given the current permitting structure of the Remediation

General Permit, available dilution is not considered when determining the appropriate metals permit limitations given the fact that the discharge is directed to a salt water body. Given this limitation of the Remediation General Permit, Brown University has determined that seeking coverage under an individual permit would provide additional permitting flexibility and would be their preferred permitting option.

Receiving Water

The ultimate receiving water for the discharge is the Providence River, waterbody ID RI0007020E-01B, which is classified as an SB1{a} water body. This segment of the Providence River is currently listed as being impaired for total nitrogen, dissolved oxygen, and fecal coliform. *Attachment B* contains a Locus Plan which identifies the location of the groundwater treatment system and the location where the discharge enters the Providence River.

Groundwater Treatment System

The proposed treatment system includes a 1-micron prefilter for removal of suspended solids and iron precipitate (to address fouling of the GAC units), followed by three 200-pound granular activated carbon (GAC) adsorbers in series for VOC removal and additional oxidized iron removal. The treatment system has been designed hydraulically for an average flow rate of 2.1 gpm, with the capabilities to accommodate a maximum flow rate of 10 gpm. *Attachment C* contains a line drawing which identifies the treatment system components associated with the combined treatment system as contained in the February 2011 RIPDES individual permit application.

General Requirements

Development of RIPDES permit limitations is a multi-step process consisting of the following steps: identifying applicable technology-based limits; calculating allowable water-quality based discharge levels based on in-stream criteria, background data and available dilution; establishing Best Professional Judgement (BPJ) limits in accordance with Section 402 of the CWA; and assigning the most stringent as the final discharge limitations.

Water quality criteria are comprised of numeric and narrative criteria. Numeric criteria are scientifically derived ambient concentrations developed by EPA or States for various pollutants of concern to protect human health and aquatic life. Narrative criteria are statements that describe the desired water quality goal. A technology-based limit is a numeric limit, which is determined by examining the capability of a treatment process to reduce or eliminate pollutants.

Water Quality Based Permit Limitations

Appendix B of the Water Quality Regulations describes the flows used to determine compliance with the aquatic life criteria, specifying that the design flow to be utilized for aquatic life criteria shall not be exceeded at or above the lowest average seven (7) consecutive day low flow with an average recurrence frequency of once in ten (10) years (7Q10).

Two major river systems, the Seekonk River and the Providence River, discharge and mix in the area of the storm water outlet which is the ultimate discharge location for Brown University's groundwater treatment system. To conservatively estimate the minimum dilution available at the point of discharge only a portion of the river flows were considered. Only the 7Q10 flow from the Blackstone River that feeds into the Seekonk River was considered. The 7Q10 flow of the Blackstone River in Woonsocket is 102.25 cubic feet per second (cfs). To arrive at a conservative (minimum) estimate of the dilution at the outfall, DEM assumed that only a fraction of the river flow moves by the near shore area adjacent to the point of discharge. If we assume, that the discharge mixes only with 5% of the net 7Q10 river flow for the Blackstone River, the 2.1 gpm average site discharge would mix with 5cfs or 2,224 gpm of /river flow. Thus the discharge would be diluted by a factor of approximately 1,000 times.

Allowable water quality based effluent limitations were established based on the Class SB1{a} saltwater acute and chronic aquatic life criteria and human health criteria specified in Appendix B of the Rhode Island Water Quality Regulations, using 80% allocation when no background data is available and 90% allocation when background data is available. There is no background data

available, therefore, the allowable water quality-based discharge levels were calculated as follows:

$$\text{Limif}_1 = (\text{Dilution Factor}) * (\text{WQ Criteria}) * (80\%)$$

In accordance with 40 CFR 122.44(d)(1)(iii), water quality based effluent limitations are only required for those pollutants in the discharge that have the reasonable potential to cause or contribute to the exceedence of in-stream criteria. In order to evaluate the need for permit limits, the allowable monthly average (chronic) and allowable maximum daily (acute) discharge concentrations are compared to the monthly average and maximum daily Discharge Monitoring Report (DMR) data.

The groundwater at the site has low levels of Arsenic, Chromium III, Copper, Lead, Nickel, Selenium, Silver, and Zinc. However, the concentration of these pollutants in the influent is low enough such that there is no reasonable potential for the discharge to exceed the applicable permit limits for these pollutants. In the case of Iron, a water quality standard does not exist for this parameter in the water quality regulations for discharges to salt waters. Based on the DEM's review of the influent data permit limitations for metals are not required and as a result have not been applied in this permit. A comparison of the groundwater influent data versus applicable permit limitations for all parameters evaluated can be found in *Attachment D*.

Technology Based Permit Limitations

DEM is required to consider technology and water quality requirements when developing permit effluent limits. Technology based treatment requirements represent the minimum level of control that must be imposed under Section 402 and 301(b) of the Act (see 40 CFR 125 Subpart A) to meet Best Practicable Control Technology Currently Available (BPT), Best Conventional Control Technology (BCT) for conventional pollutants, and Best Available Technology Economically Achievable (BAT) for toxic pollutants. In the absence of technology based guidelines, DEM is authorized to use Best Professional Judgement (BPJ) to establish effluent limitations, in accordance with Section 402(a)(1) of the CWA. Since the Environmental Protection Agency has not promulgated technology-based standards for this discharge, DEM developed BPJ limits.

BPJ Limitations

Granular activated carbon technology is proven to be able to remove VOCs and CVOCs to low levels when operated properly. Because granular activated carbon technology is readily available and proven to be highly effective, permit limitations have been applied for all pollutants that are present in groundwater at the site that were directly associated with the gasoline release. These pollutants are total petroleum hydrocarbons, benzene, toluene, ethylbenzene, total xylenes (m,p,o), total BTEX, Methyl-t-Butyl-Ether (MTBE), and Tert-Amyl Methyl Ether (TAME). Permit limits have been applied for these constituents which are equivalent to those applied under the previous Remediation General Permit authorization. Consistent with the Remediation General Permit the primary concern during this remediation project is removing the BTEX, PAHs, and VOCs using standard carbon adsorption treatment.

The requirements set forth in this permit are from the State's Water Quality Regulations and the State's Regulations for the Rhode Island Pollutant Discharge Elimination System, both filed pursuant to RIGL Chapter 46-12, as amended. DEM's primary authority over the permit comes from EPA's delegation of the program in September 1984 under the Federal Clean Water Act.

The effluent monitoring requirements have been specified in accordance with RIPDES regulations as well as 40 CFR 122.41 (j), 122.44 (l), and 122.48 to yield data representative of the discharge.

The remaining general and specific conditions of the permit are based on the RIPDES regulations as well as 40 CFR Parts 122 through 125 and consist primarily of management requirements common to all permits.

IV. 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 close of the public comment period, to the Rhode Island Department of

Environmental Management, Office of Water Resources, 235 Promenade Street, Providence, Rhode Island, 02908-5767. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to the Rhode Island Department of Environmental Management. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty (30) days public notice whenever the Director finds that the response to this notice indicates significant public interest. In reaching a final decision on the draft permit the Director will respond to all significant comments and make these responses available to the public at DEM's Providence Office.

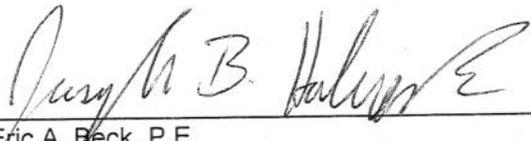
Following the close of the comment period, and after a public hearing, if such hearing is held, the Director will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within thirty (30) days following the notice of the final permit decision any interested person may submit a request for a formal hearing to reconsider or contest the final decision. Requests for formal hearings must satisfy the requirements of Rule 49 of the Regulations for the Rhode Island Pollutant Discharge Elimination System.

V. **DEM Contact**

Additional information concerning the permit may be obtained between the hours of 8:30 a.m. and 4:00 p.m., Monday through Friday, excluding holidays, from:

Brian Lafaille, P.E.
RIPDES Program
Office of Water Resources
Department of Environmental Management
235 Promenade Street
Providence, Rhode Island 02908
Telephone: (401) 222-4700, extension 7715

5/20/11
Date _____

for 
Eric A. Beck, P.E.
Supervising Sanitary Engineer
RIPDES Permitting Section
Department of Environmental Management

Attachment A

DESCRIPTION OF DISCHARGE: Treated Groundwater
DISCHARGE: 001A - Treatment Discharge

AVERAGE EFFLUENT CHARACTERISTICS AT POINT OF DISCHARGE OF SELECTED POLLUTANTS:

PARAMETER	Monthly Average¹	Daily Maximum²
Flow	2.2 gpm	3.2 gpm
Arsenic, total recoverable	1.13 ug/l	1.4 ug/l
Benzene	1 ug/l	1 ug/l
Total BTEX	1.6 ug/l	1.6 ug/l
Total Chromium, trivalent	2.2 ug/l	7.6 ug/l
Total Copper	3.2 ug/l	8.6 ug/l
Ethylbenzene	1 ug/l	1 ug/l
Total Petroleum Hydrocarbons	101.7 ug/l	106.7 ug/l
Total Iron	72 ug/l	150 ug/l
Total Lead	1.9 ug/l	4.6 ug/l
Methyl tert-butyl ether	1.8 ug/l	3.7 ug/l
Total Nickel	6.9 ug/l	17.8 ug/l
Total Selenium	15.6 ug/l	37.7 ug/l
Total Silver	0.84 ug/l	1 ug/l
Total Suspended Solids	1111 ug/l	1333 ug/l
Tert-Amyl Methyl Ether	3.7 ug/l	6.7 ug/l
Toluene	1 ug/l	1 ug/l
Xylene (m & p)	1.4 ug/l	1.7 ug/l
Total Zinc	24.8 ug/l	42.4 ug/l

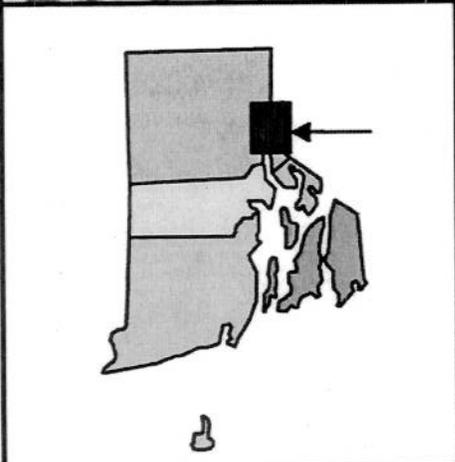
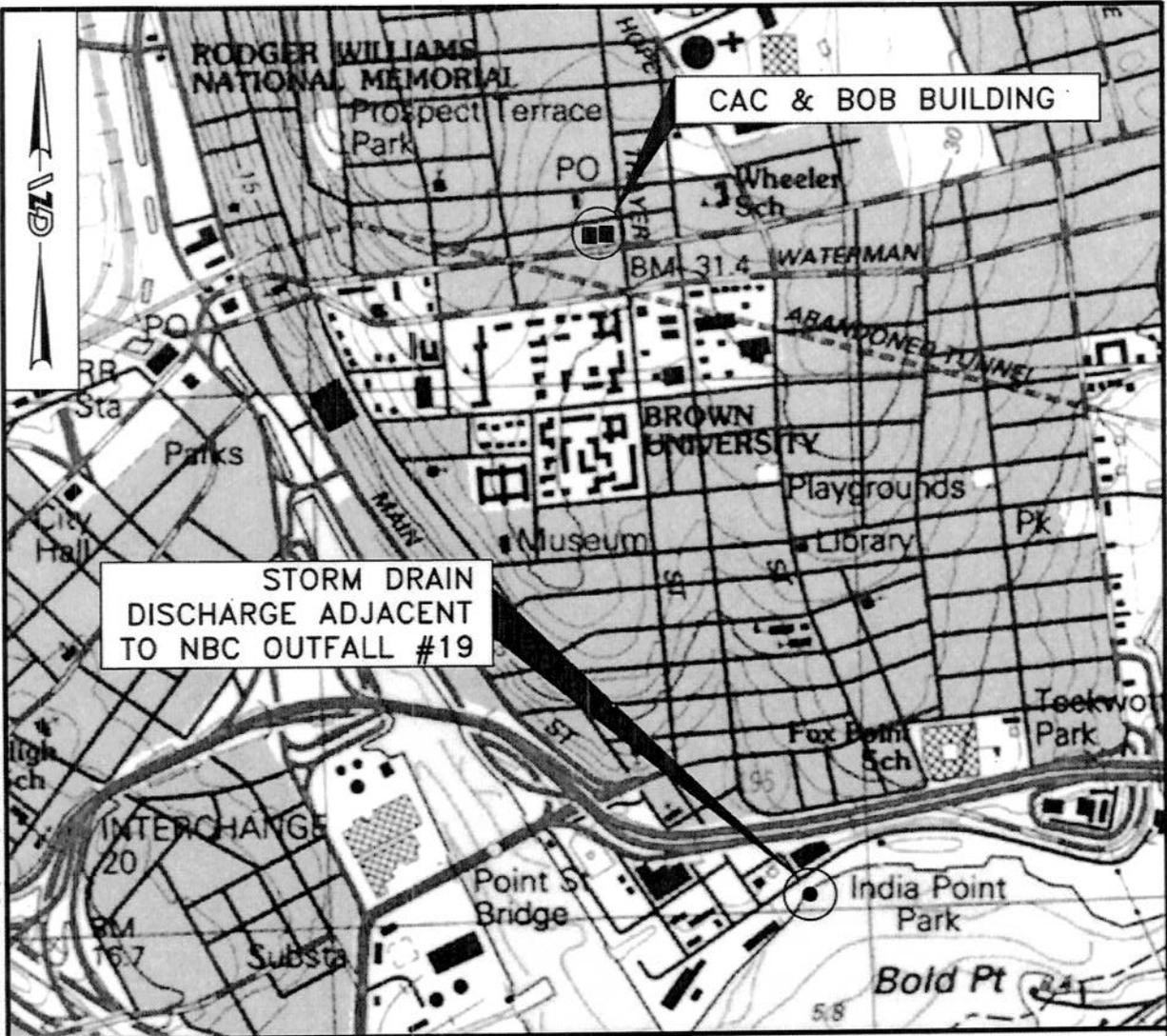
¹Data represents the mean of the monthly average data from May 26, 2010 – February 2011

²Data represents the mean of the daily maximum data from May 26, 2010 – February 2011

Attachment B

Locus Plan

© 2010 - GZA GeoEnvironmental, Inc. GZA-J:\ENV\32990-03.dwg\32990-03_F1_R0_LOCUS.dwg [LOCUS] February 28, 2011 - 9:56am corl.berghden



FROM USGS PROVIDENCE,
 RHODE ISLAND-MASSACHUSETTS QUADANGLE MAP (1987)

(DIGITAL TOPOGRAPHIC MAPS PROVIDED BY MAPTECH. INC.)
 (CONTOUR ELEVATIONS ARE SHOWN IN METERS ABOVE NGVD 29, AT 3 METER INTERVALS)

APPROXIMATE SCALE IN FEET



CREATIVE ARTS CENTER - CAC
 BROWN OFFICE BUILDING - BOB
 152 & 164 ANGELL STREET

PROVIDENCE, RHODE ISLAND

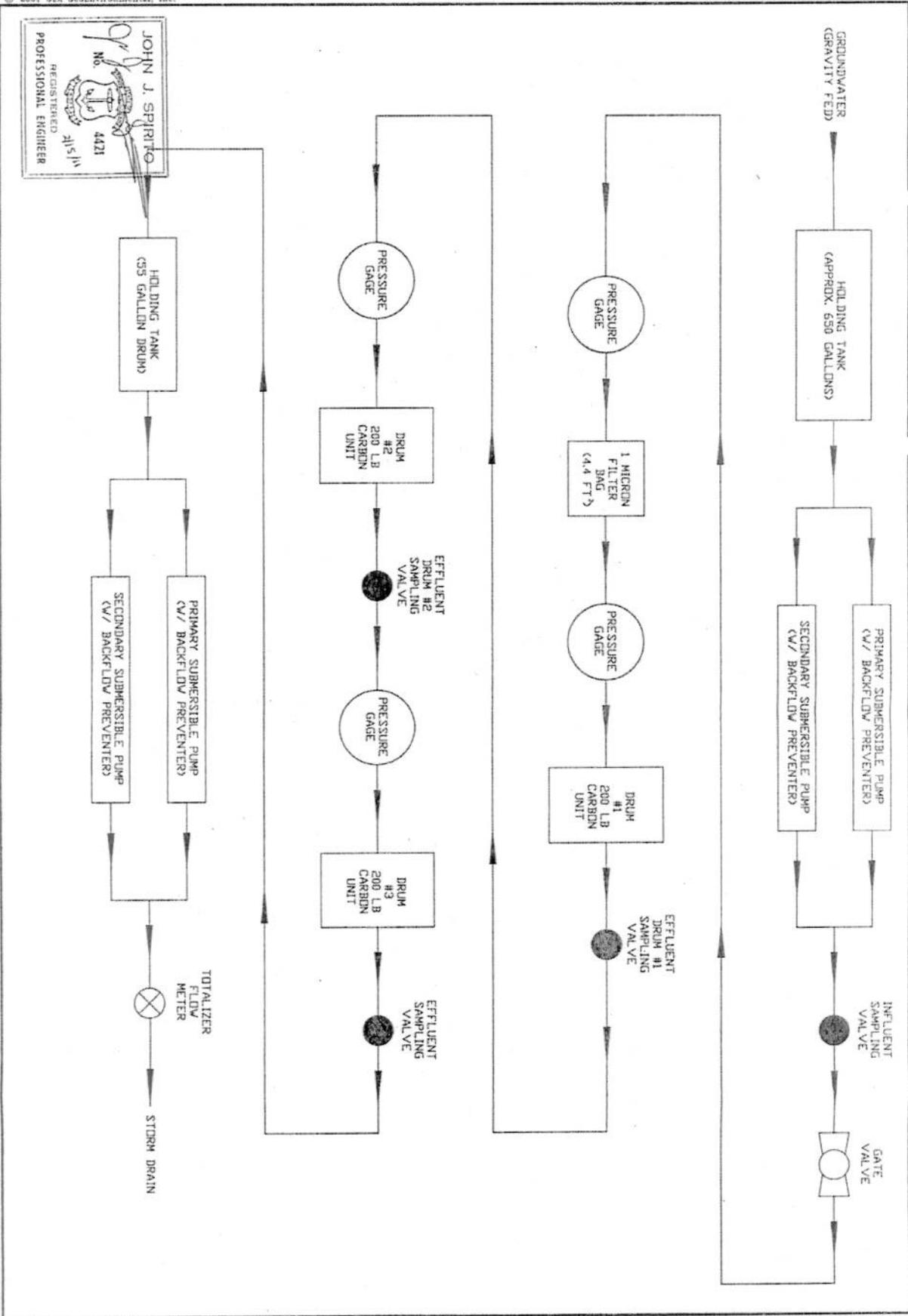
LOCUS PLAN

FEBRUARY 2010

FIGURE NO. 1

Attachment C

Brown University Treatment System Diagram



JOHN J. SPURTO
 REGISTERED PROFESSIONAL ENGINEER
 No. 4421
 3/15/11

JOB NO. 32990.03
 FIGURE NO. A1

BROWN OFFICE BUILDING
 164 ANGELL STREET
 PROVIDENCE, RHODE ISLAND

TEMPORARY DEWATERING GAC TREATMENT SYSTEM SPECS.

NO SCALE

PROJ MGR: AIF
 DESIGNED BY: AIF
 REVIEWED BY: JJS

OPERATOR: AIF
 DATE: FEB 2011

Attachment D

Facility Name: Brown University BOB/CAC Combined Discharge
RIPDES Permit #: RI0023892

Outfall #: 001

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L) Based on WQ Criteria		Antideg. Limits (ug/L) Monthly Ave	Permit Application Data (ug/L) 3/17/2011		Ave. DMR Data Influent (ug/L) 5/10 - 2/11		Potential WQ Based Permit Limits (ug/L)		Previous Remediation General Permit Limits (ug/l)		Reasonable Potential (Yes/No)
		Daily Max	Monthly Ave		Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	
PRIORITY POLLUTANTS:													
TOXIC METALS AND CYANIDE													
ANTIMONY	7440360	No Criteria	512000.00	---	---	<2.0	---	---	---	512000	---	---	No
ARSENIC, TOTAL	7440382	55200.00	1120.00	---	---	<1.0 to 0.34	2.73	1.53	55200	1120	55.2	1.12	No
ASBESTOS	1332214	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---
BERYLLIUM	7440417	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---
CADMIUM, TOTAL	7440439	32193.16	7082.49	---	---	<0.5	---	---	32193.15895	7082.49497	---	---	No
CHROMIUM III, TOTAL	16065831	No Criteria	No Criteria	---	---	<1.0 to <20	8.27	2.57	---	---	---	100	No
CHROMIUM VI, TOTAL	18540299	886203.42	40281.97	---	---	<1.0 to <20	---	---	886203.424	40281.97382	---	---	No
COPPER, TOTAL	7440508	4626.51	2987.95	---	---	2.7 to 14	8.63	5.27	4626.506024	2987.951807	4.62	2.98	No
CYANIDE	57125	800.00	800.00	---	---	<10	---	---	800	800	---	---	No
LEAD, TOTAL	7439921	176656.15	6813.88	---	---	<1 to 26	9.93	2.53	176656.1514	6813.880126	176.6	6.81	No
MERCURY, TOTAL	7439976	1694.12	120.00	---	---	<0.2	---	---	1694.117647	120	---	---	No
NICKEL, TOTAL	7440020	59797.98	6626.26	---	---	1.8 to <5.0	5	3.6	59797.9798	6626.262626	59.79	6.62	No
SELENIUM, TOTAL	7782492	232464.93	56913.83	---	---	<2.5 to 68.8	55.2	17.9	232464.9299	56913.82768	232.48	56.91	No
SILVER, TOTAL	7440224	1788.24	1788.24	---	---	<0.5 to 1.1	1	0.9	1788.235294	1788.235294	1.78	1.78	No
THALLIUM	7440280	No Criteria	376.00	---	---	---	---	---	---	376	---	---	---
ZINC, TOTAL	7440666	76109.94	68498.94	---	---	11 to 110	72.3	31.3	76109.93658	68498.94292	76.11	68.5	No
VOLATILE ORGANIC COMPOUNDS													
ACROLEIN	107028	No Criteria	232000.00	---	---	---	---	---	---	232000	---	---	---
ACRYLONITRILE	107131	No Criteria	2000.00	---	---	---	---	---	---	2000	---	---	---
BENZENE	71432	No Criteria	408000.00	---	---	<1.0 to <5.0	1.5	1.07	---	408000	5	5	Apply RGP Limit
BROMOFORM	75252	No Criteria	1120000.00	---	---	---	---	---	---	1120000	---	---	---
CARBON TETRACHLORIDE	56235	No Criteria	12800.00	---	---	---	---	---	---	12800	---	---	---
CHLOROBENZENE	108907	No Criteria	1280000.00	---	---	---	---	---	---	1280000	---	---	---
CHLORODIBROMOMETHANE	124481	No Criteria	104000.00	---	---	---	---	---	---	104000	---	---	---
CHLOROFORM	67663	No Criteria	3760000.00	---	---	---	---	---	---	3760000	---	---	---
DICHLOROBROMOMETHANE	75274	No Criteria	136000.00	---	---	---	---	---	---	136000	---	---	---
1,2DICHLOROETHANE	107062	No Criteria	296000.00	---	---	---	---	---	---	296000	---	---	---
1,1DICHLOROETHYLENE	75354	No Criteria	5680000.00	---	---	---	---	---	---	5680000	---	---	---
1,2DICHLOROPROPANE	78875	No Criteria	120000.00	---	---	---	---	---	---	120000	---	---	---
1,3DICHLOROPROPYLENE	542756	No Criteria	16800.00	---	---	---	---	---	---	16800	---	---	---
ETHYLBENZENE	100414	No Criteria	1680000.00	---	---	<1.0 to <5.0	1.5	1.1	---	1680000	---	1680	Apply RGP Limit
BROMOMETHANE (methyl bromide)	74839	No Criteria	1200000.00	---	---	---	---	---	---	1200000	---	---	---
CHLOROMETHANE (methyl chloride)	74873	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---
METHYLENE CHLORIDE	75092	No Criteria	4720000.00	---	---	---	---	---	---	4720000	---	---	---
1,1,2,2TETRACHLOROETHANE	79345	No Criteria	32000.00	---	---	---	---	---	---	32000	---	---	---
FLUORENE	86737	No Criteria	4240000.00	---	---	---	---	---	---	4240000	---	---	---
HEXACHLOROBENZENE	118741	No Criteria	2.32	---	---	---	---	---	---	2.32	---	---	---
HEXACHLOROBUTADIENE	87683	No Criteria	144000.00	---	---	---	---	---	---	144000	---	---	---
HEXACHLOROCYCLOPENTADIENE	77474	No Criteria	880000.00	---	---	---	---	---	---	880000	---	---	---
HEXACHLOROETHANE	67721	No Criteria	26400.00	---	---	---	---	---	---	26400	---	---	---
ISOPHORONE	78591	No Criteria	7680000.00	---	---	---	---	---	---	7680000	---	---	---
NAPHTHALENE	91203	No Criteria	No Criteria	---	---	<5.0	---	---	---	---	---	---	No Limit Applied
NITROBENZENE	98953	No Criteria	552000.00	---	---	---	---	---	---	552000	---	---	---
N-NITROSODIMETHYLAMINE	62759	No Criteria	24000.00	---	---	---	---	---	---	24000	---	---	---
N-NITROSODI-N-PROPYLAMINE	621647	No Criteria	4080.00	---	---	---	---	---	---	4080	---	---	---
N-NITROSODIPHENYLAMINE	86306	No Criteria	48000.00	---	---	---	---	---	---	48000	---	---	---
PYRENE	129000	No Criteria	3200000.00	---	---	---	---	---	---	3200000	---	---	---
1,2,4trichlorobenzene	120821	No Criteria	56000.00	---	---	---	---	---	---	56000	---	---	---
PESTICIDES/PCBs													
ALDRIN	309002	1040.00	0.40	---	---	---	---	---	1040	0.4	---	---	---
Alpha BHC	319846	No Criteria	39.20	---	---	---	---	---	---	39.2	---	---	---

Facility Name: Brown University BOB/CAC Combined Discharge
RIPDES Permit #: RI0023892

Outfall #: 001

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L)		Antideg. Limits (ug/L) Monthly Ave	Permit Application Data (ug/L) 3/17/2011		Ave. DMR Data Influent (ug/L) 5/10 - 2/11		Potential WQ Based Permit Limits (ug/L)		Previous Remediation General Permit Limits (ug/l)		Reasonable Potential (Yes/No)		
		Based on WQ Criteria			Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave		Daily Max	Monthly Ave
		Daily Max	Monthly Ave												
Beta BHC	319857	No Criteria	136.00							136					
Gamma BHC (Lindane)	58899	128.00	128.00							128					
CHLORDANE	57749	72.00	3.20							72					
4,4DDT	50293	104.00	0.80							104					
4,4DDE	72559	No Criteria	1.76												
4,4DDD	72548	No Criteria	2.48												
DIELDRIN	60571	568.00	0.43							568					
ENDOSULFAN (alpha)	959988	27.20	6.96							27.2					
ENDOSULFAN (beta)	33213659	27.20	6.96							27.2					
ENDOSULFAN (sulfate)	1031078	No Criteria	71200.00												
ENDRIN	72208	29.60	1.84							29.6					
ENDRIN ALDEHYDE	7421934	No Criteria	240.00												
HEPTACHLOR	76448	42.40	0.63							42.4					
HEPTACHLOR EPOXIDE	1024573	42.40	0.31							42.4					
POLYCHLORINATED BIPHENYLS3	1336363	No Criteria	0.51												
2,3,7,8TCDD (Dioxin)	1746016	No Criteria	0.00												
TOXAPHENE	8001352	168.00	0.16							168					
TRIBUTYL TIN		336.00	5.92							336					
TETRACHLOROETHYLENE	127184	No Criteria	26400.00												
TOLUENE	108883	No Criteria	12000000.00		<1.0 to <5.0		1.5	1.1		12000000		12,000	Apply RGP Limit		
1,2TRANS-DICHLOROETHYLENE	156605	No Criteria	8000000.00							8000000					
1,1,1TRICHLOROETHANE	71556	No Criteria	No Criteria												
1,1,2TRICHLOROETHANE	79005	No Criteria	128000.00							128000					
TRICHLOROETHYLENE	79016	No Criteria	240000.00							240000					
VINYL CHLORIDE	75014	No Criteria	1920.00							1920					
ACID ORGANIC COMPOUNDS															
2CHLOROPHENOL	95578	No Criteria	120000.00							120000					
2,4DICHLOROPHENOL	120832	No Criteria	232000.00							232000					
2,4DIMETHYLPHENOL	105679	No Criteria	680000.00							680000					
4,6DINITRO-2METHYLPHENOL	534521	No Criteria	224000.00							224000					
2,4DINITROPHENOL	51285	No Criteria	4240000.00							4240000					
4NITROPHENOL	88755	No Criteria	No Criteria												
PENTACHLOROPHENOL	87865	10400.00	6320.00							10400			No Limit Applied		
PHENOL	108952	No Criteria	999999999.00							999999999			No Limit Applied		
2,4,6TRICHLOROPHENOL	88062	No Criteria	19200.00							19200					
BASE NEUTRAL COMPOUNDS															
ACENAPHTHENE	83329	No Criteria	792000.00							792000					
ANTHRACENE	120127	No Criteria	32000000.00							32000000					
BENZIDINE	92875	No Criteria	1.60							1.6					
PAHs		No Criteria	144.00							144					
BIS(2CHLOROETHYL)ETHER	111444	No Criteria	4240.00							4240					
BIS(2CHLOROISOPROPYL)ETHER	108601	No Criteria	52000000.00							52000000					
BIS(2ETHYLHEXYL)PHTHALATE	117817	No Criteria	17600.00							17600			No Limit Applied		
BUTYL BENZYL PHTHALATE	85687	No Criteria	1520000.00							1520000					
2CHLORONAPHTHALENE	91587	No Criteria	1280000.00							1280000					
1,2DICHLORO BENZENE	95501	No Criteria	1040000.00							1040000					
1,3DICHLORO BENZENE	541731	No Criteria	768000.00							768000					
1,4DICHLORO BENZENE	106467	No Criteria	152000.00							152000					
3,3DICHLORO BENZIDENE	91941	No Criteria	224.00							224					
DIETHYL PHTHALATE	84662	No Criteria	35200000.00							35200000					
DIMETHYL PHTHALATE	131113	No Criteria	880000000.00							880000000					
Di-n-BUTYL PHTHALATE	84742	No Criteria	3600000.00							3600000					
2,4DINITROTOLUENE	121142	No Criteria	27200.00							27200					

Facility Name: Brown University BOB/CAC Combined Discharge
RIPDES Permit #: RI0023892

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NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L) Based on WQ Criteria		Antideg. Limits (ug/L) Monthly Ave	Permit Application Data (ug/L) 3/17/2011		Ave. DMR Data Influent (ug/L) 5/10 - 2/11		Potential WQ Based Permit Limits (ug/L)		Previous Remediation General Permit Limits (ug/l)		Reasonable Potential (Yes/No)	
		Daily Max	Monthly Ave		Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave		
1,2DIPHENYLHYDRAZINE	122667	No Criteria	1600.00	---	---	---	---	---	---	1600	---	---	---	
FLUORANTHENE	206440	No Criteria	112000.00	---	---	---	---	---	---	112000	---	---	---	
NON PRIORITY POLLUTANTS:														
OTHER SUBSTANCES														
ALUMINUM, TOTAL	7429905	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
AMMONIA (as N), WINTER (NOV-APR)	7664417	3945600.00	591840.00	---	---	---	---	---	3945600	591840	---	---	---	
AMMONIA (as N), SUMMER (MAY-OCT)	7664417	3024960.00	453744.00	---	---	---	---	---	3024960	453744	---	---	---	
4BROMOPHENYL PHENYL ETHER		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
CHLORIDE	16887006	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
CHLORINE	7782505	13000.00	7500.00	---	---	---	---	---	13000	7500	---	---	---	
4CHLORO2METHYLPHENOL		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
1CHLORONAPHTHALENE		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
4CHLOROPHENOL	106489	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
2,4DICHLORO6METHYLPHENOL		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
1,1DICHLOROPROPANE		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
1,3DICHLOROPROPANE	142289	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
2,3DINITROTOLUENE		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
2,4DINITRO6METHYL PHENOL		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
IRON	7439896	No Criteria	No Criteria	---	---	31-802	537.7	175	---	---	---	---	No Limit Applied	
pentachlorobenzene	608935	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
PENTACHLOROETHANE		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
1,2,3,5tetrachlorobenzene		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
1,1,1,2TETRACHLOROETHANE	630206	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
2,3,4,6TETRACHLOROPHENOL	58902	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
2,3,5,6TETRACHLOROPHENOL		No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
2,4,5TRICHLOROPHENOL	95954	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
2,4,6TRINITROPHENOL	88062	No Criteria	No Criteria	---	---	---	---	---	---	---	---	---	---	
XYLENE	1330207	No Criteria	No Criteria	---	---	---	---	2.7	1.7	---	---	---	Apply RGP Limit	
NON WQ BASED PARAMETERS														
TOTAL BTEX (ug/l)	---	No Criteria	No Criteria	---	---	---	---	2.67	1.7	---	---	100	100	Apply RGP Limit
TPH (ug/l)	---	No Criteria	No Criteria	---	---	---	---	156.7	134	---	---	1000	---	Apply RGP Limit
MTBE (ug/l)	---	No Criteria	No Criteria	---	---	---	---	356.7	219.3	---	---	70	---	Apply RGP Limit
TSS (ug/l)	---	No Criteria	No Criteria	---	---	---	<1000 - 5000	4000	1830	---	---	30,000	---	No Limit Applied
TERT-AMYL METHYL ETHER (ug/l)	---	No Criteria	No Criteria	---	---	---	---	8	6.2	---	---	---	---	Apply RGP Limit
FLOW (gpm)	---	No Criteria	No Criteria	---	---	---	2.1	2.2	3.23	---	---	10	---	Design Capacity