

**DRAFT AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)**

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, sections 26-53,

Russell Biomass, LLC

is authorized to discharge from a facility located at

**Station Road
Russell, MA 01071**

to receiving water named **Westfield River** (Hydrologic Basin Code 01080206)

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 shall expire at midnight, five (5) years from the last day of the month preceding the effective date.

This Permit consists of 15 pages in Part I including Effluent Limitations and Monitoring Requirements, Reporting Requirements, and State Permit Conditions; Attachment A- Freshwater Acute Toxicity Test Procedure and Protocol (8 pages) and Part II including Standard Conditions.

Signed this day of , 2009

Stephen S. Perkins, Director
Office of Ecosystem Protection
Environmental Protection Agency (EPA)
Region 1 – New England
Boston, MA

Glenn Haas, Director
Division of Watershed Management
Massachusetts Department of Environmental
Protection (MassDEP)
Boston, MA

* This Permit will become effective on the date of signature if no comments are received during public notice. If comments are received during public notice, this Permit will be made effective no sooner than 60 days after signature.

PART I.A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through the expiration date, Russell Biomass (the Permittee) is authorized to discharge from outfall serial number **001**: cooling tower blowdown and low volume waste¹ to the Westfield River. Such discharges shall be limited and monitored by the Permittee as specified below.

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
Flow Rate (million gallons per day) (MGD)	0.101	0.133	Continuous	Recorder
Free Available Chlorine (milligrams per liter) (mg/L)	0.2 ²	0.5 ³	Three times per discharge	Grab
Total Residual Chlorine (mg/L)	No detectable amount	No detectable amount	Once per day – as required ⁴	Grab
The 126 priority pollutants contained in chemicals added for cooling tower maintenance	No detectable amount	No detectable amount	Once per year	Grab
Temperature (°F)	Report	85 ³	Continuous	Recorder
Total Suspended Solids (mg/L)	---	Report	Once per month	Composite
Oil and Grease (mg/L)	---	Report	Once per month	Grab
Phosphorus (mg/L)	Report	Report	Once per month ⁵	Composite
Phosphorus (mg/L) influent (intake water)	Report	Report	Once per month ⁵	Composite
pH (standard units)	≥ 6.5 and ≤ 8.3		Continuous	Recorder ⁶
Whole Effluent Toxicity LC50 (%)		Report	Once per quarter	24 hour Composite
A-NOEC (%)	---	Report		
Ammonia (mg/L)	---	Report		
Hardness (mg/L)	---	Report		
Total Organic Carbon (mg/L)	---	Report		
Total Aluminum (mg/L)	---	Report		
Total Chromium (mg/L)	---	Report		
Total Cadmium (mg/L)	---	Report		
Total Copper (mg/L)	---	Report		
Total Lead (mg/L)	---	Report		
Total Nickel (mg/L)	---	Report		
Total Zinc (mg/L)	---	Report		

¹ Low volume wastes are those included as internal outfalls 002 and 003.

² This limit is the average of samples made over a single period of chlorine release, which does not exceed 2 hours; not an average monthly limit.

³ This limit shall not be exceeded at any time (instantaneous maximum); not a maximum daily limit.

⁴ See Part I.A.1.c below.

⁵ Phosphorus shall be monitored and reported for both the intake water and the discharge at outfall 001.

⁶ Report minimum and maximum values.

- a. Effluent samples shall be representative of the discharge and shall be taken from the discharge pipe of the neutralization system prior to discharging into the Westfield River and without mixing with storm water.
- b. The maximum instantaneous discharge rate shall not exceed 110 gallons per minute.
- c. The first free available chlorine sample shall be taken within the first five minutes of resuming discharge of the cooling tower circulation water after daily disinfection. If detectable levels of free available chlorine occur in the discharge, total residual chlorine samples shall be taken two (2) hours after commencement of discharging.
- d. Neither free available chlorine nor total residual oxidants may be discharged for more than two hours in any one day.
- e. Within this Permit term, the Permittee may demonstrate through engineering calculations that each of the 126 priority pollutants in 40 CFR § 423.15(j)(3) are not detectable in the final discharge. If this approach is taken, the cooling tower blowdown and boiler blowdown waste streams must be tested for priority pollutants at least once to confirm any engineering calculations, except that reliable information supplied by the manufacturer relative to the priority pollutants in a product may be substituted for actual tests. Dilution for such engineering calculations must be based on the lowest projected cooling tower/boiler blowdown flow. The chemical concentrations used in such engineering calculations shall be based on anticipated (or manufacturer's suggested) feed rates of cooling tower and boiler chemical additives and must take into consideration concentration within the cooling towers. Upon receipt of written approval from EPA, the Permittee is not required to sample/analyze for the demonstrated pollutants. Every December Discharge Monitoring Report (DMR) thereafter, the Permittee shall certify that no new chemicals or waste streams have been added and that the engineering demonstrations are still valid.
- f. The Permittee shall conduct 48-Hour Static Acute Whole Effluent Toxicity (WET) tests on effluent samples using Fathead Minnows (*Pimephales promelas*) and Daphnid (*Ceriodaphnia dubia*) following the protocol in Attachment A (Freshwater Acute Toxicity Test Procedure and Protocol, dated December 1995). Toxicity test samples shall be collected and tests completed during the calendar quarters ending March 31st, June 30th, September 30th and December 31st of each year. Toxicity test results are to be submitted by the 15th day of the month following the end of the quarter sampled. For example, test results for the calendar quarter January through March are due April 15th.
 - i. LC₅₀ (Lethal Concentration 50 Percent) is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate.
 - ii. A-NOEC (Acute-No Observed Effect Concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life-cycle or partial life-cycle test which causes no adverse effects (in this case, death) at a specific time of observation as determined from hypothesis testing where the test results (again, death) exhibit a linear dose-response relationship. However,

where the test results do not exhibit a linear dose-response relationship, report the lowest concentration where there is no observable effect. See Attachment A, page 7 (VII. Toxicity Test Data Analysis) for additional clarification.

- iii. For each WET test the Permittee shall report on the appropriate Discharge Monitoring Report (DMR), the concentrations of the Ammonia, Hardness, Total Organic Carbon, Aluminum, Cadmium, Chromium, Copper, Lead, Nickel and Zinc found in the 100 percent effluent sample. These chemical parameters shall be determined to at least the minimum quantification level shown in Attachment A, page 6, or as amended. Also, the Permittee should note that all chemical parameter results must still be reported in the appropriate toxicity report.
 - iv. The Permittee may submit a written request to the EPA and MassDEP requesting a reduction in the frequency (to not less than once per year) and/or number of species tested, after completion of a minimum of four (4) valid toxicity tests. Until written notice is received by certified mail from the EPA indicating that the Whole Effluent Testing requirement has been changed, the Permittee is required to continue testing at the frequency specified in this Permit.
2. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge from internal outfall serial number **002**: equipment cooling, laboratory waste water, miscellaneous floor drains and floor washing. Such discharges shall be limited and monitored by the Permittee as specified below.

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
Flow Rate (MGD)	Report	Report	Continuous	Estimate
Total Suspended Solids (mg/L)	30	100	Once per quarter	Composite
Oil and Grease (mg/L)	15	20	Once per quarter	Grab

- a. Effluent samples shall be representative of the discharge and shall be taken from the discharge pipe of the oil/water separator prior to mixing with any other streams.
- b. No less than 60 days prior to discharging from outfall 002, the Permittee shall submit to EPA and MassDEP the names and uses of all laboratory substances that the Permittee will or may use and/or discharge from its laboratory. The discharge of other laboratory substances from outfall 002 is prohibited. EPA or MassDEP may prohibit the discharge of any laboratory substance upon written notice to the Permittee.
- c. Soaps and/or detergents shall not be added to any waste streams entering and/or treated within the oil/water separator.
- d. If a Stoker type boiler is installed at the facility, the Permittee is authorized, during periodic maintenance, to discharge the water troughs used to collect and transport bottom ash. Quarterly sampling shall include this waste stream.

3. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge from internal outfall serial number **003**: boiler blowdown. Such discharges shall be limited and monitored by the Permittee as specified below.

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
Flow Rate (MGD)	Report	Report	Continuous	Estimate
Phosphorus (lbs/day)	Report	0.407	Once per month	Composite
Total Suspended Solids (mg/L)	30	100	Once per quarter	Composite
Oil and Grease (mg/L)	15	20	Once per quarter	Grab

- a. Effluent samples shall be representative of the discharge and shall be taken from the discharge line of the boiler prior to mixing with cooling tower water or any other streams.

4. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge from outfall serial numbers **004** and **005**: storm water runoff to the Westfield River. Such discharges shall be limited and monitored by the Permittee as specified below.

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
Flow Rate (MGD)	---	Report	Once per quarter	Estimate
Total Suspended Solids (mg/L) ^{1,3}	---	Report	Once per quarter	Grab
Iron (mg/L) ^{2,3}		Report	Once per quarter	Grab
pH (standard units)	≥ 6.5 and ≤ 8.3		Once per quarter	Grab
pH (standard units) of rainfall	---	Report	Once per quarter	Grab

¹ The benchmark concentration for Total Suspended Solids is 100 mg/L, as identified in EPA’s 2008 Storm Water Multi-Sector General Permit for Industrial Activities (2008 MSGP).

² The benchmark concentration for Iron is 1.0 mg/L, as identified in EPA’s 2008 MSGP.

³ See Part I.A.5.f below.

- a. Effluent samples shall be representative of the discharge and shall be taken from each stormwater detention basin drain pipe, prior to discharging into the Westfield River for the north-side collection system (outfall 004) and prior to discharging over-land following the natural drainage pattern to the Westfield River for the south-side collection system (outfall 005).

- b. At each outfall, grab samples shall be collected of the effluent resulting from a storm event or snowmelt that produces an actual discharge to the Westfield River (i.e., “qualifying event”), which follows an antecedent dry period of at least 72 hours (3 days).
- c. Samples shall be taken during the first thirty (30) minutes of a qualifying event. If it is not possible to collect the sample(s) within the first 30 minutes, the sample(s) must be collected as soon as practicable after the first 30 minutes and the Permittee shall submit documentation with the monitoring report explaining why it was not possible to take samples within the first 30 minutes.
- d. When adverse weather conditions prevent the collection of samples according to the relevant monitoring schedule, the Permittee must take a substitute sample during the next qualifying storm event. Adverse weather conditions are those that are dangerous or create inaccessibility for personnel, such as local flooding, high winds, or electrical storms, or situations that otherwise make sampling impractical, such as drought, extended frozen conditions or a specified storm event did not occur during sampling period. If the Permittee is unable to collect grab sample(s) due to adverse climatic conditions, the Permittee must submit, in lieu of sampling data, a description of why the grab sample(s) could not be collected, including available documentation of the event. A "no discharge" report shall be submitted for those quarters in which there is no discharge.
- e. The pH of the effluent shall not be less than 6.5 or greater than 8.3 standard units, unless these values are exceeded as a result of natural causes (which may be determined by comparison to the upstream pH). The pH of the effluent shall not be more than 0.5 units outside of the naturally occurring range. Rainfall pH shall be monitored when the discharge is monitored and shall be reported on the appropriate Discharge Monitoring Report.
- f. Based on the September 29, 2008, Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activities (MSGP), as amended effective May 27, 2009, Russell Biomass is likely to be eligible for the MSGP. The Permittee may choose to apply for the MSGP to replace storm water requirements in this Permit, which are defined as the Effluent Limitations and Monitoring Requirements in Part I.A.4 for outfalls 004 and 005 and the Storm Water Pollution Prevention Plan (SWPPP) requirements in Part I.A.5. The Permittee is required to meet all conditions in Parts I.A.4 and I.A.5 of this Permit until the Permittee receives authorization to discharge under the MSGP for both Subpart O and Subpart A, Subsector A3.

5. Storm Water Pollution Prevention Plan (SWPPP)

- a. 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>).

- b. 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 the SWPPP has been completed or updated, that it meets the requirements of the Permit, 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 the Permit.
- c. 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 (as modified 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:
 - i. A pollution prevention team with collective and individual responsibilities for developing, implementing, maintaining, revising and ensuring compliance with the SWPPP;
 - ii. 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, directions of stormwater flows, and locations of all existing structural control measures, stormwater conveyances, pollutant sources (identified in c.iii. below), stormwater monitoring points, stormwater inlets and outlets, and industrial activities exposed to precipitation such as, storage, disposal, material handling;
 - iii. 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;
 - iv. A description of all stormwater controls, both structural and non-structural; and
 - v. 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.
- d. 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 (as modified 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:
 - i. Minimizing exposure of manufacturing, processing, and material storage areas to stormwater discharges;
 - ii. Good housekeeping measures designed to maintain areas that are potential sources of pollutants;

- iii. Preventative maintenance programs to avoid leaks, spills, and other releases of pollutants in stormwater discharged to receiving waters;
 - iv. Spill prevention and response procedures to ensure effective response to spills and leaks if or when they occur;
 - v. 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;
 - vi. Runoff management practices to divert, infiltrate, reuse, contain, or otherwise reduce stormwater runoff; and
 - vii. Proper handling procedures for salt or materials containing chlorides that are used for snow and ice control.
- e. 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:
- i. The date and time of the inspection and at which any samples were collected;
 - ii. The name(s) and signature(s) of the inspector(s)/sample collector(s);
 - iii. If applicable, why it was not possible to take samples within the first 30 minutes;
 - iv. Weather information and a description of any discharges occurring at the time of the inspection;
 - v. Results of observations of stormwater discharges, including any observed discharges of pollutants and the probable sources of those pollutants;
 - vi. Any control measures needing maintenance, repairs or replacement; and
 - vii. Any additional control measures needed to comply with the Permit requirements.
- f. If the average of four (4) monitoring values for a parameter in any calendar year exceeds its benchmark concentration, the Permittee shall review the selection, design, installation, and implementation of all BMPs and control measures in its SWPPP, and make necessary modifications until the running four (4) quarter average for the parameter no longer exceeds the benchmark concentration. The Permittee must make necessary modifications immediately, without waiting for a full 4 quarters of monitoring data, if an exceedance of the 4 quarter average in any year is mathematically certain.
- g. 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.

- h. 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.

6. Water Treatment Chemicals

- a. The Permittee may propose to conduct feasibility studies involving new chemicals not currently approved for water discharge. The Permittee shall gain approval from EPA and MassDEP before any such studies take place. A report summarizing the results of any such studies shall be submitted to EPA and MassDEP regarding discharge frequency, concentration, and the impact, if any, on the indigenous populations of the receiving water. EPA and MassDEP may require, among other parameters, Whole Effluent Toxicity testing as part of feasibility studies. The Permittee may discharge chemicals not currently approved by this Permit only after receiving written approval from EPA.
- b. No water or waste water treatment chemicals shall contain aluminum or aluminum compounds.
- c. Chlorine only may be used as a biocide. No other biocide shall be used without explicit approval from EPA and MassDEP.

7. Water Quality Requirements

- a. Discharges shall not either cause a violation of the water quality standards or jeopardize any Class B or existing use of the Westfield River, including the Cold Water Fishery Resource designation by the Massachusetts Department of Fish and Game.
- b. Pollutants which are not limited by the Permit, but have been specifically disclosed in the last Permit Application, may be discharged at the frequency and level disclosed in the application, provided that such discharge does not violate sections 307 and 311 of the Act or applicable water quality standards.

- c. The effluent shall not contain metals and/or materials in concentrations or in combinations which are hazardous or toxic to aquatic life or which would impair the uses designated by the classification of the receiving waters.
- d. Discharges to the Westfield River shall be adequately treated to insure that the surface water remains free from pollutants in concentrations or combinations that settle to form harmful deposits, float as foam, debris, scum, visible oil sheen or other visible pollutants. They shall be adequately treated to insure that the surface waters remain free from pollutants which produce odor, color, taste, or turbidity in the receiving water which is not naturally occurring and would render it unsuitable for its designated uses.
- e. The thermal plume from the station shall: (a) not block zones of fish passage, (b) not interfere with the spawning, development/growth, residence, feeding and/or other natural behaviors of indigenous populations, (c) not change the balanced indigenous population of the receiving water, and (d) have minimal contact with surrounding shorelines.
- f. The natural seasonal and diurnal cycles of the receiving water shall remain unchanged by the discharge, the annual spring and fall temperature changes shall be gradual, and large day-to-day temperature fluctuations shall be avoided.

8. Cooling Water Intake Structure Requirements

- a. No change in the location, design or capacity of the cooling water intake structure (CWIS) can be made without prior approval of EPA and MassDEP. The present design shall be reviewed for conformity to regulations pursuant to CWA § 316(b) at each permit renewal.
- b. Total cooling water withdrawal shall not exceed a maximum value of 750 gallons per minute and 885,015 gallons per day.
- c. The Permittee shall maintain a trash rack with a maximum of 1-inch bar spacing at the outer entrance to the intake structure, and two fixed mesh screens with a maximum mesh size of 9.5 mm inside the intake structure.
- d. The Permittee shall maintain a through-screen velocity at all screens and trash racks no greater than 0.5 fps.
- e. Within 60 days of initiating operation of the pumps, the Permittee shall either measure or calculate the through-screens velocity at all screens and report the results to EPA and MassDEP.

9. Thermal Monitoring Requirements

- a. During the first year of operation, the Permittee shall conduct a thermal plume characterization study for in-stream temperatures corresponding to peak summer operating conditions.

- i. The Permittee shall continuously monitor temperatures for two consecutive weeks, representative of high summer temperatures, based on available weather data and when the maximum daily flow is 885,015 gpd, to the extent practicable.
- ii. The Permittee shall monitor the ambient receiving water temperature upstream of outfall 001 by establishing three, equally spaced temperature stations equipped with temperature data loggers along a bank-to-bank transect at a location equidistant between the Indian River Hydro dam and outfall 001 (locations of temperature stations may be estimated in the field).
- iii. The Permittee shall establish bank-to-bank transects perpendicular to the flow of the river (1) approximately every 10 feet with the first transect at outfall 001 and extending 50 feet; and (2) approximately every 50 feet between 50 feet and 250 feet downstream of outfall 001. Each transect shall include three temperature stations equipped with temperature data loggers: one station within 5 feet of the east bank, a second station approximately 15 feet from the east bank, and a third approximately 22 feet from the east bank (locations may be estimated in the field). At each of the three stations, temperature (measured to the nearest 0.5°F) shall be monitored at mid-depth. Data loggers shall record temperature in 15-minute intervals.
- iv. A report summarizing the results of this thermal plume characterization study shall be submitted to EPA and MassDEP within 60 days of the completion of the sampling period. The Permittee shall report ambient air temperature and water surface elevation at each station. In addition, data loggers shall record temperature at 15-minute intervals and the Permittee shall report hourly average and maximum temperatures. The report also shall include an assessment of whether or not the conditions during the sampling period represented typical or worst case thermal conditions in the river, discharge, and air temperature.
- v. If the results of the thermal monitoring described in Part 1.A.9.a(i) through (iv) indicate that the discharge causes or contributes to an exceedance of any State water quality criterion, then those results may be considered "New Information" under 40 CFR §122.62(a)(2). Based on these monitoring results, this Permit may be modified, or alternatively, revoked and reissued to incorporate additional and/or revised requirements, including requirements for further study and/or revised effluent limitations under Part I.A.1 of this Permit.

10. Biological Monitoring Requirements

- a. During operation of Russell Biomass and for the duration of the Permit, the Permittee shall conduct and report biological monitoring using methods described below.
- b. The Permittee shall inspect the inside and outside of the intake structure and mesh screens no less than once per month.
 - i. After shutting off the intake pumps and installing the stop log directly behind the trash rack, the mesh screens shall be removed, inspected, and cleaned of debris and organisms. Any remaining debris and organisms inside the intake structure

shall be removed before replacing the mesh screens or removing the stop log. The stop log shall be removed after the mesh screens have been placed in the intake vault.

- ii. All fish and other aquatic organisms collected on the mesh screens shall be identified, counted, and live organisms returned to their natural habitat with minimal stress and at a location that minimizes potential for re-impingement. All other material shall be removed from the intake screens and disposed of in accordance with all existing federal, state, and/or local laws and regulations that apply to waste disposal. Such material shall not be returned to the receiving waters.
 - iii. If the Permittee observes four (4) or more dead fish in the intake structure during any inspection or at any other time, the Permittee shall report the event to EPA and MassDEP within 24 hours by telephone. In this case, a dead fish exhibits no body or opercular movement and does not respond to gentle prodding. The Permittee shall visually inspect the CWIS for dead fish each day following the initial event until the number of dead fish observed in the intake is less than four. A written confirmation report shall be provided within five business days of the last day of the event. These oral and written reports shall include the following information: the date(s) and time of the event; the number, species and length of the fish; and any actions taken by the facility (e.g. cooling water intake flow reduced, etc).
 - iv. The Permittee shall record results of all intake inspections in a log and report these results in the annual CWIS Biological Monitoring Report.
- c. The Permittee shall conduct entrainment monitoring at the intake pipe, prior to entry to the pump, weekly between May 1 and August 31 each year.
- i. During consecutive weeks one sample shall be collected during daylight hours and one during night hours. Sampling shall be conducted using a 0.333 mm mesh plankton net. Volume shall equal approximately 100 m³.
 - ii. In the laboratory, all eggs and larvae shall be identified to the lowest practical taxa and counted. 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.
- d. Results of both the intake inspections and entrainment monitoring shall be reported annually in a CWIS Biological Monitoring Report, 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 annual CWIS Biological Monitoring Report shall be submitted to EPA and MassDEP by February 28th.
- e. After two years, the Permittee may submit a written request to the EPA and MassDEP requesting a reduction in the frequency of the required intake screen and entrainment monitoring requirements (Part I.A.10.b/c). Until written notice is received by certified

mail from the EPA indicating that the intake screen and entrainment monitoring frequency has been changed, the Permittee is required to continue monitoring at the frequency specified in this Permit.

11. Other Requirements

- a. There shall be no discharge of polychlorinated biphenyl (PCB) compounds such as those commonly used for transformer fluid. The Permittee shall dispose of all known PCB equipment, articles, and wastes in accordance with 40 CFR 761.
- b. There will be no discharge of metal cleaning wastes, including water used in the washing of boiler tubes, boiler firesides, condensers, air preheaters, or any other type of metal process equipment.
- c. There shall be no discharge of waste water pollutants from fly ash wash or fly ash transport waters.
- d. Wood chips, sawdust, waste ash, and other wood related debris shall not enter the Westfield River from the facility or any runoff area. These materials shall be prevented from entering the storm water collection system. All solids collection areas shall be inspected at least quarterly for compliance with this provision and, if necessary, cleaned. All debris removed from collection areas shall be disposed of according to applicable State and Federal regulations.
- e. The Permittee shall comply with all existing federal, state, and local laws and regulations that apply to the reuse or disposal of solids, such as those which may be removed from the cooling towers, water and waste treatment operations and equipment cleaning. At no time shall these solids be discharged to the Westfield River.
- f. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Regional Administrator as soon as they know or have reason to believe (40 CFR §122.42):
 - i. 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-dinitrophenol; 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 CFR §122.21(g)(7); or

- (4) Any other notification level established by the Regional Administrator in accordance with 40 CFR §122.44(f).
- ii. 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 CFR §122.21(g)(7); or
 - (4) Any other notification level established by the Regional Administrator in accordance with 40 CFR §122.44(f).
- g. This Permit shall be modified in accordance with 40 CFR Section 122.62(a)(3) if the standards or regulations on which the Permit is based have been changed by promulgation of amended standards or regulations or by judicial decision after the Permit is issued in accordance with 40 CFR Section 122.62(a)(3).

PART I.B. MONITORING AND REPORTING

Monitoring results shall be summarized for each calendar month and reported on separate Discharge Monitoring Report Form(s) (DMRs) postmarked no later than the 15th day of the month following the completed reporting period. The Permittee shall provide written explanations of all violations in DMR cover letters.

For additional monitoring requirements, see Section C of the Part II Standard Conditions. Section C includes, but is not limited to, the requirements to record: the date, exact place, and time of sampling, measurements, and analyses; the individual(s) who performed the sampling, measurements, and analyses; the analytical techniques or methods used; and the results of such analyses.

Russell Biomass, LLC may assert a business confidentiality claim with respect to part or all of the information submitted to EPA in the manner described at 40 CFR Part 2.203(b). Information covered by such a claim will be disclosed by EPA only to the extent, and by means, of the procedures set forth in 40 CFR Part 2, Subpart B. If no such claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA without further notice to Russell Biomass, LLC. Effluent information may not be regarded as confidential.

Signed and dated originals of the DMRs, and all other reports required herein, shall be submitted to the EPA at the following address:

U.S. Environmental Protection Agency
Water Technical Unit (SEW)
P.O. Box 8127
Boston, Massachusetts 02114-8127

In addition, duplicate signed copies of all DMRs and Whole Effluent Toxicity reports required by this Permit shall be submitted to the State at:

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

All reports required by this Permit except WET reports shall be submitted to the State at:

Massachusetts Department of Environmental Protection
Western Regional Office - Bureau of Resource Protection
436 Dwight Street
Springfield, MA 01103

PART I.C. STATE PERMIT CONDITIONS

This Discharge Permit is issued jointly by the U. S. Environmental Protection Agency and the Massachusetts Department of Environmental Protection 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 Massachusetts Department of Environmental Protection 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
FRESHWATER ACUTE
TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **Daphnid (Ceriodaphnia dubia) definitive 48 hour test.**
- **Fathead Minnow (Pimephales promelas) definitive 48 hour test.**

Acute toxicity test data shall be reported as outlined in Section VIII.

II. METHODS

Methods should follow those recommended by EPA in:

Weber, C.I. et al. Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, Fourth Edition. Environmental Monitoring Systems Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH. August 1993, EPA/600/4-90/027F.

Any exceptions are stated herein.

III. SAMPLE COLLECTION

A discharge sample shall be collected. Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for chemical and physical analyses required. The remaining sample shall be measured for total residual chlorine and dechlorinated (if detected) in the laboratory using sodium thiosulfate for subsequent toxicity testing. (Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection.) Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

Standard Methods for the Examination of Water and Wastewater describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1.0 mg/L chlorine. A thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) should also be run.

All samples held overnight shall be refrigerated at 4°C.

IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point upstream of the discharge free from toxicity or other sources of contamination. Avoid collecting near areas of obvious road or agricultural runoff, storm sewers or other point source discharges. An additional control (0% effluent) of a standard laboratory water of known quality shall also be tested.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternate standard dilution water of known quality with a hardness, pH, conductivity, alkalinity, organic carbon, and total suspended solids similar to that of the receiving water may be substituted **AFTER RECEIVING WRITTEN APPROVAL FROM THE PERMIT ISSUING AGENCY(S)**. Written requests for use of an alternate dilution water should be mailed with supporting documentation to the following address:

Director
 Office of Ecosystem Protection
 U.S. Environmental Protection Agency, Region 1
 One Congress Street
 Suite 1100 (CAA)
 Boston, MA 02114-2023

It may prove beneficial to have the proposed dilution water source screened for suitability prior to toxicity testing. EPA strongly urges that screening be done prior to set up of a full definitive toxicity test any time there is question about the dilution water's ability to support acceptable performance as outlined in the 'test acceptability' section of the protocol.

V. TEST CONDITIONS

The following tables summarize the accepted daphnid and fathead minnow toxicity test conditions and test acceptability criteria:

EPA NEW ENGLAND RECOMMENDED EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, *CERIODAPHNIA DUBIA* 48 HOUR ACUTE TESTS¹

1. Test type	Static, non-renewal
2. Temperature (°C)	20 ± 1° C or 25 ± 1° C
3. Light quality	Ambient laboratory illumination
4. Photoperiod	16 hour light, 8 hour dark
5. Test chamber size (December 1995)	Minimum 30 ml

6. Test solution volume	Minimum 25 ml
7. Age of test organisms	1-24 hours (neonates)
8. No. daphnids per test chamber	5
9. No. of replicate test chambers per treatment	4
10. Total no. daphnids per test concentration	20
11. Feeding regime	Feed YCT and <u>Selenastrum</u> while holding organisms prior to initiating test as per manual.
12. Aeration	None
13. Dilution water ²	Receiving water, other surface water, synthetic soft water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q ^R or equivalent deionized water and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14. Dilution factor	≥ 0.5
15. Number of dilutions ³	5 plus a control. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16. Effect measured	Mortality-no movement of body or appendages on gentle prodding
17. Test acceptability	90% or greater survival of test organisms in control solution
18. Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that

they are removed from the sampling device. For off-site tests, samples must first be used within 36 hours of collection.

19. Sample volume required

Minimum 1 liter

Footnotes:

¹ Adapted from EPA/600/4-90/027F.

² Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.

³ When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

EPA NEW ENGLAND RECOMMENDED TEST CONDITIONS FOR THE FATHEAD MINNOW (PIMEPHALES PROMELAS) 48 HOUR ACUTE TEST¹

1. Test Type	Static, non-renewal
2. Temperature (°C):	20 ± 1 ° C or 25 ± 1°C
3. Light quality:	Ambient laboratory illumination
4. Photoperiod:	16 hr light, 8 hr dark
5. Size of test vessels:	250 mL minimum
6. Volume of test solution:	Minimum 200 mL/replicate
7. Age of fish:	1-14 days old and age within 24 hrs of the others
8. No. of fish per chamber	10 (not to exceed loading limits)
9. No. of replicate test vessels per treatment	4
10. Total no. organisms per concentration:	40
11. Feeding regime:	Light feeding using concentrated brine shrimp nauplii while holding prior to initiating the test as per manual

12. Aeration:	None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L, at which time gentle single bubble aeration should be started at a rate of less than 100 bubbles/min. (Routine D.O. check is recommended.)
13. Dilution water: ²	Receiving water, other surface water, synthetic soft water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q ^R or equivalent deionized and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14. Dilution factor	≥ 0.5
15. Number of dilutions ³	5 plus a control. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16. Effect measured	Mortality-no movement on gentle prodding
17. Test acceptability	90% or greater survival of test organisms in control solution
18. Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples are used within 36 hours of collection.
19. Sample volume required	Minimum 2 liters

Footnotes:

- ¹ Adapted from EPA-600/4-90/027F.
- ² Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.
- ³ When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, total residual chlorine, conductivity, and temperature must be measured in the highest effluent concentration and the dilution water. Dissolved oxygen, pH and temperature are also measured at 24 and 48 hour intervals. It is also recommended that total alkalinity and total hardness be measured in the control and highest effluent concentration at the beginning of the test. The following chemical analyses shall be performed for each sampling event.

<u>Parameter</u>	<u>Effluent</u>	<u>Diluent</u>	<u>Minimum Quantification Level (mg/L)</u>
Hardness ^{*1}	x	x	0.5
Alkalinity	x	x	2.0
pH	x	x	---
Specific Conductance	x	x	---
Total Solids and Suspended Solids	x	x	---
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Residual Chlorine (TRC) ^{*2}	x	x	0.05
Dissolved Oxygen	x	x	1.0
<u>Total Metals</u>			
Cd	x	x	0.001
Cr	x	x	0.005
Pb	x	x	0.005
Cu	x	x	0.0025
Zn	x	x	0.0025
Ni	x	x	0.004
Al	x	x	0.02
Mg, Ca	x	x	0.05

Superscripts:

*1 Method 2340 B (hardness by calculation) from APHA (1992) Standard Methods for the Examination of Water and Wastewater. 18th Edition.

*2 Either of the following methods the 18th Edition of the APHA Standard Methods for the Examination of Water and Wastewater must be used for Total Residual Chlorine analyses:
Method 4500-CL E Low Level Amperometric Titration Method (the preferred method); or
Method 4500-CL G DPD Colorimetric Method
or use USEPA Manual of Methods Analysis of Water and Wastes, Method 330.5

VII. TOXICITY TEST DATA ANALYSISLC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See the flow chart in Figure 6 on p. 77 of EPA 600/4-90/027F for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See the flow chart in Figure 13 on p. 94 of EPA 600/4-90/027F.

VIII. TOXICITY TEST REPORTING

A report of the results will include the following:

- Description of sample collection procedures, site description;
- Names of individuals collecting and transporting samples, times and dates of sample collection and analysis on chain-of-custody; and
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests; light and temperature regime; other information on test conditions if different than procedures recommended. Reference toxicant test data should be included.
- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)

- Raw data and bench sheets.
- Provide a description of dechlorination procedures (as applicable).
- Any other observations or test conditions affecting test outcome.