

**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 19 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 (February 2011) and Table 15 of EPA's Test Method 2019.0 (10 pages); and Part II including Standard Conditions (25 pages).

Signed this **16th** day of April, 2012

/S/ SIGNATURE ON FILE

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

David Ferris, Director
Massachusetts Wastewater Management Program
Department of Environmental Protection
(MassDEP)
Commonwealth of Massachusetts
Boston, MA

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
Flow of influent (intake water) (MGD)	Report	Report	Continuous	Recorder
Free Available Chlorine (milligrams per liter) (mg/L)	0.2 ²	0.5 ³	Three times per discharge ⁴	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
Total Phosphorus (mg/L and lbs/day)	Report	Report	Once per month ⁵	Composite
Total Phosphorus of influent (intake water) (mg/L and lbs/day)	Report	Report	Once per month ⁵	Composite
Rise in Phosphorus load (lbs/day)	No increase ⁷	---	---	Calculation ⁶
Total Aluminum (mg/L)	---	Report	Once per month ⁸	Composite
Total Aluminum (mg/L) upstream	---	Report	Once per month ⁸	Grab
Total Aluminum (mg/L) receiving water	---	Report	Once per month ⁸	Grab
pH (standard units)	≥ 6.5 and ≤ 8.3		Continuous	Recorder ⁹
Whole Effluent Toxicity LC50(%)		Report	Once per quarter	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 measured at least once per month, concurrently at the intake and outfall 001 during each daily monitoring event. Phosphorous shall be reported as mass and concentration for both locations.
- ⁶ Rise in phosphorus load shall be calculated by subtracting the average monthly load at the intake (influent) from the average monthly load at Outfall 001. Daily load is determined by using the following equation: $\text{mg/L} \times 8.34 \times \text{MGD} = \text{pounds/day}$.
- ⁷ There shall be no detectable increase in the average monthly mass-based phosphorus load (reported as pounds per day) between the influent (measured at the intake) and discharge (measured at Outfall 001). No increase in the phosphorus load is defined here as any amount of change in load between the two locations, reported to the nearest one tenth of a pound per day. For this calculation, concentration shall be measured to the nearest microgram per liter and flow shall be measured to the nearest thousand gallons per day.
- ⁸ Aluminum shall be monitored concurrently at outfall 001, a representative location upstream of the intake and in the receiving water at a location downstream of the discharge location during times when there is a discharge from the facility and according to the conditions at Part I.A.1.f of this permit. When adverse weather conditions prevent the collection of samples according to the relevant monitoring schedule, the Permittee must submit, in lieu of sampling data, a description of why the in-stream grab sample(s) could not be collected, including available documentation of the event. See Part I.A.4.d for a definition of what constitutes "adverse weather conditions".
- ⁹ 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 chlorine may be discharged for more than two hours in any one calendar 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 upstream aluminum concentration shall be measured at a location representative of the receiving water prior to intake at the facility but no more than 50 feet upstream of the cooling water intake structure. The downstream concentration shall be measured at a location 10 to 20 feet downstream of the discharge location and within 10 feet of the east bank of the receiving water, in an area affected by the discharge.
- g. Within 24 months of the effective date of this permit, the Permittee shall prepare and submit to EPA and MassDEP a proposal to study the exceedances of the chronic State Water Quality Standard (WQS) for aluminum in the Westfield River and means by which the Permittee can mitigate these exceedances. This study shall include collecting, presenting and evaluating reasonably available in-stream water data relevant to the attainment of State WQS for aluminum; information regarding the sources of aluminum in the Westfield River; information regarding the contributory loads of aluminum to the Westfield River; and an evaluation of the variation and distribution of aluminum levels in the Westfield River. The final study report shall be submitted to EPA and MassDEP within 3 years of the effective date of the permit.
- h. The Permittee may, after a minimum of two years of monthly monitoring for aluminum, request a reduction in monitoring frequency if the Permittee demonstrates there is no reasonable potential to cause or contribute to an exceedance of the in-stream water quality criteria. The Permittee is required to continue testing at the frequency specified in the permit until notice is received by certified mail from the EPA that the monitoring requirements have been changed.

- i. 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 February 2011). For the first two consecutive years of operation, the Permittee shall also conduct 48-Hour Static Acute Whole Effluent Toxicity (WET) tests on effluent samples using *Rainbow Trout* (*Oncorhynchus mykiss*) following the protocol on Table 15 (Test Method 2019.0) on pages 57-58 of EPA's *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, 5th edition (Oct 2002). EPA-821-R-02-012. 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 drained from the 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
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 or within 0.5 units of rainfall pH ⁴		Once per quarter	Grab
pH (standard units) of rainfall	---	Report	Once per quarter	Grab
Turbidity (NTU's)		Report	Once per quarter ⁵	Grab
Turbidity (NTU's) of river upstream		Report	Once per quarter ⁵	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.

⁴ See Part I.A.4.e below.

⁵ Turbidity shall be monitored concurrently at the outfall location and a representative location upstream of the intake during each quarterly sampled rain event. The upstream location must be representative of the receiving water prior to the storm water discharge at the facility.

- 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 rainfall 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.
- g. If stormwater from outfall location 005 results in actual discharge to the Westfield River, the Permittee shall report to EPA and MassDEP the days during which an outfall 005 discharge occurred with each Discharge Monitoring Report.
- h. The Permittee shall monitor and report those parameters on EPA's priority pollutants list, which can be found in Appendix A to 40 C.F.R. 423, and glyphosate within the second year and within the fifth year the facility is operating. The monitoring information must be sent to EPA and MassDEP within two months of sample collection.

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 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 no less than 14 days prior to any changes at the facility that might 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, maintenance, materials storage, or other activities at the facility. The Permittee also shall amend and update the SWPPP within 14 days of 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, including any coagulants proposed as part of the incoming water treatment system. The Permittee shall gain approval from EPA and MassDEP before any such studies take place. No study may involve actual discharges of the proposed new chemicals into the Westfield River. 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 interfere with the attainment of 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 fall the plant is operating after permit issuance, the Permittee shall conduct a thermal plume characterization study for in-stream temperatures.
 - i. The Permittee shall continuously monitor temperatures for two consecutive weeks between September 15th and October 31st.
 - ii. The Permittee shall monitor the ambient receiving water temperature upstream of the discharge location by establishing three, equally spaced temperature stations equipped with temperature data loggers along a bank-to-bank transect at a location downstream of the Indian River Hydro dam and at a depth and flow representative of, but out of the influence of, the discharge location (locations of temperature stations may be estimated in the field). An additional temperature station shall be established on the west bank of the river directly across from the dog leg approximately 450 feet downstream of the discharge location.
 - 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 the discharge location and extending 50 feet; and (2) approximately every 50 feet between 50 feet and 250 feet downstream of the discharge location. Each transect shall include three temperature stations equipped with temperature data loggers: one station at the centerline of streamflow, one within 5 feet of the east bank, and a third within 5 feet of the west bank (locations to be estimated in the field). At each of the three stations, continuous temperature monitors (measuring to the nearest 0.5°F in 15-minute intervals) shall be placed between the river bottom and mid-depth.
 - iv. In addition to temperature, the Permittee shall collect a daily sample for dissolved oxygen at each established temperature station between the hours of 10:00 am and 2:00 pm.
 - v. A report summarizing the results of this thermal plume characterization study, including dissolved oxygen, shall be submitted to EPA and MassDEP within 60 days of the completion of the sampling period. The Permittee shall report hourly ambient air temperature and water surface elevation at each station. The Permittee shall report hourly average and maximum river temperatures at each station. In addition, the Permittee shall report hourly average and maximum discharge temperature and flow, daily stream flow, and submit all recorded temperature data.
 - vi. If the results of the monitoring described in Part 1.A.9.a(i) through (v) 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 from July 1 to March 31 for the duration of the permit. During the first two years of operation of the CWIS, the Permittee shall inspect the CWIS weekly from April 1 to June 15. Following the first two years of CWIS operation, the Permittee shall inspect the CWIS no less than once per month year-round for the duration of the permit unless otherwise directed by EPA or MassDEP.
 - 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 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

1. **For a period of one year from the effective date of the permit**, the Permittee may either submit monitoring data and other reports to EPA in hard copy form or report electronically using NetDMR, a web-based tool that allows permittees to electronically submit discharge monitoring reports (DMRs) and other required reports via a secure internet connection. **Beginning no later than one year after the effective date of the permit**, the Permittee shall begin reporting using NetDMR, unless the facility is able to demonstrate a reasonable basis that precludes the use of NetDMR for submitting DMRs and reports. Specific requirements regarding submittal of data and reports in hard copy form and for submittal using NetDMR are described below:

- a. Submittal of Reports Using NetDMR

NetDMR is accessed from: <http://www.epa.gov/netdmr>. **Within one year of the effective date of this permit**, the Permittee shall begin submitting DMRs and reports required under this permit electronically to EPA using NetDMR, unless the facility is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports (“opt-out request”).

DMRs shall be submitted electronically to EPA no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA, as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and will no longer be required to submit hard copies of DMRs to MassDEP. However, permittees shall continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP.

- b. Submittal of NetDMR Opt-Out Requests

Opt-out requests must be submitted in writing to EPA for written approval at least sixty (60) days prior to the date a facility would be required under this permit to begin using NetDMR. This demonstration shall be valid for twelve (12) months from the date of EPA approval and shall thereupon expire. At such time, DMRs and reports shall be submitted electronically to EPA unless the Permittee submits a renewed opt-out request and such request is approved by EPA. All opt-out requests should be sent to the following addresses:

Attn: NetDMR Coordinator
U.S. Environmental Protection Agency, Water Technical Unit
5 Post Office Square, Suite 100 (OES04-4)
Boston, MA 02109-3912

And

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

c. Submittal of Reports in Hard Copy Form

Monitoring results shall be summarized for each calendar month and reported on separate hard copy Discharge Monitoring Report Form(s) (DMRs) postmarked no later than the 15th day of the month following the completed reporting period. All reports required under this permit shall be submitted as an attachment to the DMRs. Signed and dated originals of the DMRs, and all other reports or notifications required herein or in Part II shall be submitted to the Director at the following address:

U.S. Environmental Protection Agency
Water Technical Unit (OES04-SMR)
5 Post Office Square - Suite 100
Boston, MA 02109-3912

Duplicate signed copies of all reports or notifications required above shall be submitted to the State at the following addresses:

**MassDEP – Western Region
Bureau of Waste Prevention (Industrial)
436 Dwight Street, Suite 402
Springfield, MA 01103**

And

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

Any verbal reports, if required in **Parts I** and/or **II** of this permit, shall be made to both EPA-New England and to MassDEP.

PART I.C. STATE PERMIT CONDITIONS

1. This authorization to discharge includes two separate and independent permit authorizations. The two permit authorizations are (i) a federal National Pollutant Discharge Elimination System permit issued by the U.S. Environmental Protection Agency (EPA) pursuant to the Federal Clean Water Act, 33 U.S.C. §§1251 et seq.; and (ii) an identical state surface water discharge permit issued by the Commissioner of the Massachusetts Department of Environmental Protection (MassDEP) pursuant to the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53, and 314 C.M.R. 3.00. All of the requirements contained in this authorization, as well as the standard conditions contained in 314 CMR 3.19, are hereby incorporated by reference into this state surface water discharge permit.
2. This authorization also incorporates the state water quality certification issued by MassDEP under § 401(a) of the Federal Clean Water Act, 40 C.F.R. 124.53, M.G.L. c. 21, § 27 and 314 CMR 3.07. All of the requirements (if any) contained in MassDEP's water quality certification for the permit are hereby incorporated by reference into this state surface water discharge permit as special conditions pursuant to 314 CMR 3.11.
3. 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 a 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.

USEPA REGION 1 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

The permittee shall use 40 CFR Part 136 methods. Methods and guidance may be found at:

<http://water.epa.gov/scitech/swguidance/methods/cwa/wet/index.cfm>

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. This protocol defines more specific requirements while still being consistent with the Part 136 methods. If, due to modifications of Part 136, there are conflicting requirements between the Part 136 method and this protocol, the permittee shall comply with the requirements of the Part 136 method.

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. If dechlorination is necessary, a thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) must also be run in the WET test.

All samples held overnight shall be refrigerated at 1- 6°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 immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. In the case where an alternate dilution water has been agreed upon an additional receiving water control (0% effluent) must 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 (CAA)
U.S. Environmental Protection Agency-New England
5 Post Office Sq., Suite 100 (OEP06-5)
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
5 Post Office Sq., Suite 100 (OES04-4)
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at <http://www.epa.gov/region1/enforcementandassistance/dmr.html> for further important details on alternate dilution water substitution requests.

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 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	Minimum 30 ml
6.	Test solution volume	Minimum 15 ml
7.	Age of test organisms	1-24 hours (neonates)
8.	No. of 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	As per manual, lightly feed YCT and <u>Selenastrum</u> to newly released organisms while holding prior to initiating test
12.	Aeration	None
13.	Dilution water ²	Receiving water, other surface water, synthetic 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 series	≥ 0.5, must bracket the permitted RWC

15. Number of dilutions ³	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. 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 dilution water 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-821-R-02-012.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.

**EPA NEW ENGLAND 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 each other
8. No. of fish per chamber	10
9. No. of replicate test vessels per treatment	4
10. Total no. organisms per concentration:	40
11. Feeding regime:	As per manual, lightly feed test age larvae using concentrated brine shrimp nauplii while holding prior to initiating test
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 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 series	≥ 0.5 , must bracket the permitted RWC
15. Number of dilutions ³	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. 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 dilution water 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-821-R-02-012
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.

VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, oxygen, hardness, alkalinity 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 in all dilutions. The following chemical analyses shall be performed on the 100 percent effluent sample and the upstream water sample for each sampling event.

<u>Parameter</u>	Effluent	Receiving Water	ML (mg/l)
Hardness ¹ ,	x	x	0.5
Total Residual Chlorine (TRC) ^{2, 3} ,	x		0.02
Alkalinity	x	x	2.0
pH ⁴	x	x	--
Specific Conductance	x	x	--
Total Solids	x		--
Total Dissolved Solids	x		--
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Metals			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

1. Hardness may be determined by:

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
 - Method 2340B (hardness by calculation)
 - Method 2340C (titration)

2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
 - Method 4500-CL E Low Level Amperometric Titration
 - Method 4500-CL G DPD Colorimetric Method

3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Kärber
- Trimmed Spearman-Kärber
- Graphical

See the flow chart in Figure 6 on p. 73 of EPA-821-R-02-012 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. 87 of EPA-821-R-02-012 .

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
- 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.

NPDES PART II STANDARD CONDITIONS

(January, 2007)

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NPDES PART II STANDARD CONDITIONS
(January, 2007)

PART II. A. GENERAL REQUIREMENTS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

- a. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.
- b. The CWA provides that any person who violates Section 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any of such sections in a permit issued under Section 402, or any requirement imposed in a pretreatment program approved under Section 402 (a)(3) or 402 (b)(8) of the CWA is subject to a civil penalty not to exceed \$25,000 per day for each violation. Any person who negligently violates such requirements is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than 1 year, or both. Any person who knowingly violates such requirements is subject to a fine of not less than \$5,000 nor more than \$50,000 per day of violation, or by imprisonment for not more than 3 years, or both.
- c. Any person may be assessed an administrative penalty by the Administrator for violating Section 301, 302, 306, 307, 308, 318, or 405 of the CWA, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the CWA. Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000. Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.

Note: See 40 CFR §122.41(a)(2) for complete “Duty to Comply” regulations.

2. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or notifications of planned changes or anticipated noncompliance does not stay any permit condition.

3. Duty to Provide Information

The permittee shall furnish to the Regional Administrator, within a reasonable time, any information which the Regional Administrator 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 Regional Administrator, upon request, copies of records required to be kept by this permit.

NPDES PART II STANDARD CONDITIONS
(January, 2007)

4. Reopener Clause

The Regional Administrator reserves the right to make appropriate revisions to this permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the CWA in order to bring all discharges into compliance with the CWA.

For any permit issued to a treatment works treating domestic sewage (including “sludge-only facilities”), the Regional Administrator or Director shall include a reopener clause to incorporate any applicable standard for sewage sludge use or disposal promulgated under Section 405 (d) of the CWA. The Regional Administrator or Director may promptly modify or revoke and reissue any permit containing the reopener clause required by this paragraph if the standard for sewage sludge use or disposal is more stringent than any requirements for sludge use or disposal in the permit, or contains a pollutant or practice not limited in the permit.

Federal regulations pertaining to permit modification, revocation and reissuance, and termination are found at 40 CFR §122.62, 122.63, 122.64, and 124.5.

5. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from responsibilities, liabilities or penalties to which the permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

6. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges.

7. Confidentiality of Information

- a. In accordance with 40 CFR Part 2, any information submitted to EPA 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, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR Part 2 (Public Information).
- b. Claims of confidentiality for the following information will be denied:
 - (1) The name and address of any permit applicant or permittee;
 - (2) Permit applications, permits, and effluent data as defined in 40 CFR §2.302(a)(2).
- c. Information required by NPDES application forms provided by the Regional Administrator under 40 CFR §122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

NPDES PART II STANDARD CONDITIONS
(January, 2007)

8. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after its expiration date, the permittee must apply for and obtain a new permit. The permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Regional Administrator. (The Regional Administrator shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

9. State Authorities

Nothing in Part 122, 123, or 124 precludes more stringent State regulation of any activity covered by these regulations, whether or not under an approved State program.

10. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, nor does it relieve the permittee of its obligation to comply with any other applicable Federal, State, or local laws and regulations.

PART II. B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. 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 and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. 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.

2. Need to Halt or Reduce Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass

a. Definitions

- (1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.

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- (2) *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can be reasonably expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provision of Paragraphs B.4.c. and 4.d. of this section.

c. Notice

- (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.
- (2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (Twenty-four hour reporting).

d. Prohibition of bypass

Bypass is prohibited, and the Regional Administrator may take enforcement action against a permittee for bypass, unless:

- (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
- (3) i) The permittee submitted notices as required under Paragraph 4.c. of this section.
ii) The Regional Administrator may approve an anticipated bypass, after considering its adverse effects, if the Regional Administrator determines that it will meet the three conditions listed above in paragraph 4.d. of this section.

5. Upset

- a. Definition. *Upset* means an exceptional incident in which there is an 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.
- b. 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 B.5.c. of this section are met. No determination made during

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administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

- c. 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:
 - (1) An upset occurred and that the permittee can identify the cause(s) of the upset;
 - (2) The permitted facility was at the time being properly operated;
 - (3) The permittee submitted notice of the upset as required in paragraphs D.1.a. and 1.e. (Twenty-four hour notice); and
 - (4) The permittee complied with any remedial measures required under B.3. above.
- d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

PART II. C. MONITORING REQUIREMENTS

1. Monitoring and Records

- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- b. Except for records for monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application except for the information concerning storm water discharges which must be retained for a total of 6 years. This retention period may be extended by request of the Regional Administrator at any time.
- c. Records of monitoring information shall include:
 - (1) The date, exact place, and time of sampling or measurements;
 - (2) The individual(s) who performed the sampling or measurements;
 - (3) The date(s) analyses were performed;
 - (4) The individual(s) who performed the analyses;
 - (5) The analytical techniques or methods used; and
 - (6) The results of such analyses.
- d. Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, unless other test procedures have been specified in the permit.
- e. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by

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imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

The permittee shall allow the Regional Administrator or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

- a. 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;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location.

PART II. D. REPORTING REQUIREMENTS

1. Reporting Requirements

- a. **Planned Changes.** The permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required when:
 - (1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR§122.29(b); or
 - (2) The alteration or addition could significantly change the nature or increase the quantities of the pollutants discharged. This notification applies to pollutants which are subject neither to the effluent limitations in the permit, nor to the notification requirements at 40 CFR§122.42(a)(1).
 - (3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition or change may justify the application of permit conditions different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
- b. **Anticipated noncompliance.** The permittee shall give advance notice to the Regional Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
- c. **Transfers.** This permit is not transferable to any person except after notice to the Regional Administrator. The Regional Administrator may require modification or revocation and reissuance of the permit to change the name of the permittee and

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incorporate such other requirements as may be necessary under the CWA. (See 40 CFR Part 122.61; in some cases, modification or revocation and reissuance is mandatory.)

- d. Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.
 - (1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.
 - (2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of the monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.
 - (3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.
- e. Twenty-four hour reporting.
 - (1) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances.

A written submission shall also be provided within 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.
 - (2) The following shall be included as information which must be reported within 24 hours under this paragraph.
 - (a) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 CFR §122.41(g).)
 - (b) Any upset which exceeds any effluent limitation in the permit.
 - (c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Regional Administrator in the permit to be reported within 24 hours. (See 40 CFR §122.44(g).)
 - (3) The Regional Administrator may waive the written report on a case-by-case basis for reports under Paragraph D.1.e. if the oral report has been received within 24 hours.

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- f. Compliance Schedules. Reports of compliance or noncompliance with, any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.
 - g. Other noncompliance. The permittee shall report all instances of noncompliance not reported under Paragraphs D.1.d., D.1.e., and D.1.f. of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph D.1.e. of this section.
 - h. Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Administrator, it shall promptly submit such facts or information.
2. Signatory Requirement
- a. All applications, reports, or information submitted to the Regional Administrator shall be signed and certified. (See 40 CFR §122.22)
 - b. The CWA 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 \$10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.
3. Availability of Reports.

Except for data determined to be confidential under Paragraph A.8. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Regional Administrator. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

PART II. E. DEFINITIONS AND ABBREVIATIONS

1. Definitions for Individual NPDES Permits including Storm Water Requirements

Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

Applicable standards and limitations means all, State, interstate, and Federal standards and limitations to which a “discharge”, a “sewage sludge use or disposal practice”, or a related activity is subject to, including “effluent limitations”, water quality standards, standards of performance, toxic effluent standards or prohibitions, “best management practices”, pretreatment standards, and “standards for sewage sludge use and disposal” under Sections 301, 302, 303, 304, 306, 307, 308, 403, and 405 of the CWA.

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Application means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in “approved States”, including any approved modifications or revisions.

Average means the arithmetic mean of values taken at the frequency required for each parameter over the specified period. For total and/or fecal coliforms and Escherichia coli, the average shall be the geometric mean.

Average monthly discharge limitation means the highest allowable average of “daily discharges” over a calendar month calculated as the sum of all “daily discharges” measured during a calendar month divided by the number of “daily discharges” measured during that month.

Average weekly discharge limitation means the highest allowable average of “daily discharges” measured during the calendar week divided by the number of “daily discharges” measured during the week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of “waters of the United States.” BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Best Professional Judgment (BPJ) means a case-by-case determination of Best Practicable Treatment (BPT), Best Available Treatment (BAT), or other appropriate technology-based standard based on an evaluation of the available technology to achieve a particular pollutant reduction and other factors set forth in 40 CFR §125.3 (d).

Coal Pile Runoff means the rainfall runoff from or through any coal storage pile.

Composite Sample means a sample consisting of a minimum of eight grab samples of equal volume collected at equal intervals during a 24-hour period (or lesser period as specified in the section on Monitoring and Reporting) and combined proportional to flow, or a sample consisting of the same number of grab samples, or greater, collected proportionally to flow over that same time period.

Construction Activities - The following definitions apply to construction activities:

- (a) Commencement of Construction is the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.
- (b) Dedicated portable asphalt plant is a portable asphalt plant located on or contiguous to a construction site and that provides asphalt only to the construction site that the plant is located on or adjacent to. The term dedicated portable asphalt plant does not include facilities that are subject to the asphalt emulsion effluent limitation guideline at 40 CFR Part 443.
- (c) Dedicated portable concrete plant is a portable concrete plant located on or contiguous to a construction site and that provides concrete only to the construction site that the plant is located on or adjacent to.

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- (d) Final Stabilization means that all soil disturbing activities at the site have been complete, and that a uniform perennial vegetative cover with a density of 70% of the cover for unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.
- (e) Runoff coefficient means the fraction of total rainfall that will appear at the conveyance as runoff.

Contiguous zone means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

Continuous discharge means a “discharge” which occurs without interruption throughout the operating hours of the facility except for infrequent shutdowns for maintenance, process changes, or similar activities.

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended by Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483, and Pub. L. 97-117; 33 USC §§1251 et seq.

Daily Discharge means the discharge of a pollutant measured during the calendar day or any other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the “daily discharge” is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the “daily discharge” is calculated as the average measurement of the pollutant over the day.

Director normally means the person authorized to sign NPDES permits by EPA or the State or an authorized representative. Conversely, it also could mean the Regional Administrator or the State Director as the context requires.

Discharge Monitoring Report Form (DMR) means the EPA standard national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by permittees. DMRs must be used by “approved States” as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA’s.

Discharge of a pollutant means:

- (a) Any addition of any “pollutant” or combination of pollutants to “waters of the United States” from any “point source”, or
- (b) Any addition of any pollutant or combination of pollutants to the waters of the “contiguous zone” or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation (See “Point Source” definition).

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead

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to a treatment works; and discharges through pipes, sewers, or other conveyances leading into privately owned treatment works.

This term does not include an addition of pollutants by any “indirect discharger.”

Effluent limitation means any restriction imposed by the Regional Administrator on quantities, discharge rates, and concentrations of “pollutants” which are “discharged” from “point sources” into “waters of the United States”, the waters of the “contiguous zone”, or the ocean.

Effluent limitation guidelines means a regulation published by the Administrator under Section 304(b) of CWA to adopt or revise “effluent limitations”.

EPA means the United States “Environmental Protection Agency”.

Flow-weighted composite sample means a composite sample consisting of a mixture of aliquots where the volume of each aliquot is proportional to the flow rate of the discharge.

Grab Sample – An individual sample collected in a period of less than 15 minutes.

Hazardous Substance means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the CWA.

Indirect Discharger means a non-domestic discharger introducing pollutants to a publicly owned treatment works.

Interference means a discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- (a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
- (b) Therefore is a cause of a violation of any requirement of the POTW’s NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act (CWA), the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection Research and Sanctuaries Act.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.

Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

Large and Medium municipal separate storm sewer system means all municipal separate storm sewers that are either: (i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and 40 CFR Part 122); or (ii) located in the counties with unincorporated urbanized

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populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships, or towns within such counties (these counties are listed in Appendices H and I of 40 CFR 122); or (iii) owned or operated by a municipality other than those described in Paragraph (i) or (ii) and that are designated by the Regional Administrator as part of the large or medium municipal separate storm sewer system.

Maximum daily discharge limitation means the highest allowable “daily discharge” concentration that occurs only during a normal day (24-hour duration).

Maximum daily discharge limitation (as defined for the Steam Electric Power Plants only) when applied to Total Residual Chlorine (TRC) or Total Residual Oxidant (TRO) is defined as “maximum concentration” or “Instantaneous Maximum Concentration” during the two hours of a chlorination cycle (or fraction thereof) prescribed in the Steam Electric Guidelines, 40 CFR Part 423. These three synonymous terms all mean “a value that shall not be exceeded” during the two-hour chlorination cycle. This interpretation differs from the specified NPDES Permit requirement, 40 CFR § 122.2, where the two terms of “Maximum Daily Discharge” and “Average Daily Discharge” concentrations are specifically limited to the daily (24-hour duration) values.

Municipality means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribe organization, or a designated and approved management agency under Section 208 of the CWA.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an “approved program”.

New Discharger means any building, structure, facility, or installation:

- (a) From which there is or may be a “discharge of pollutants”;
- (b) That did not commence the “discharge of pollutants” at a particular “site” prior to August 13, 1979;
- (c) Which is not a “new source”; and
- (d) Which has never received a finally effective NPDES permit for discharges at that “site”.

This definition includes an “indirect discharger” which commences discharging into “waters of the United States” after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a “site” for which it does not have a permit; and any offshore rig or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a “site” under EPA’s permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Regional Administrator in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Regional Administrator shall consider the factors specified in 40 CFR §§125.122 (a) (1) through (10).

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An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a “new discharger” only for the duration of its discharge in an area of biological concern.

New source means any building, structure, facility, or installation from which there is or may be a “discharge of pollutants”, the construction of which commenced:

- (a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or
- (b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

NPDES means “National Pollutant Discharge Elimination System”.

Owner or operator means the owner or operator of any “facility or activity” subject to regulation under the NPDES programs.

Pass through means a Discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW’s NPDES permit (including an increase in the magnitude or duration of a violation).

Permit means an authorization, license, or equivalent control document issued by EPA or an “approved” State.

Person means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to any pipe ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 CFR §122.2).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. §§2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

- (a) Sewage from vessels; or
- (b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

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Primary industry category means any industry category listed in the NRDC settlement agreement (Natural Resources Defense Council et al. v. Train, 8 E.R.C. 2120 (D.D.C. 1976), modified 12 E.R.C. 1833 (D. D.C. 1979)); also listed in Appendix A of 40 CFR Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operation is not the operator of the treatment works or (b) not a “POTW”.

Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly Owned Treatment Works (POTW) means any facility or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a “State” or “municipality”.

This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

Regional Administrator means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

Secondary Industry Category means any industry which is not a “primary industry category”.

Section 313 water priority chemical means a chemical or chemical category which:

- (1) is listed at 40 CFR §372.65 pursuant to Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986);
- (2) is present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and
- (3) satisfies at least one of the following criteria:
 - (i) are listed in Appendix D of 40 CFR Part 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols), or Table V (certain toxic pollutants and hazardous substances);
 - (ii) are listed as a hazardous substance pursuant to Section 311(b)(2)(A) of the CWA at 40 CFR §116.4; or
 - (iii) are pollutants for which EPA has published acute or chronic water quality criteria.

Septage means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

Sewage Sludge means any solid, semisolid, or liquid residue removed during the treatment of municipal wastewater or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced wastewater treatment, scum, septage, portable toilet pumpings, Type III Marine Sanitation Device pumpings (33 CFR Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

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Sewage sludge use or disposal practice means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

Significant materials includes, but is not limited to: raw materials, fuels, materials such as solvents, detergents, and plastic pellets, raw materials used in food processing or production, hazardous substance designated under section 101(14) of CERCLA, any chemical the facility is required to report pursuant to EPCRA Section 313, fertilizers, pesticides, and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

Significant spills includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 CFR §110.10 and §117.21) or Section 102 of CERCLA (see 40 CFR § 302.4).

Sludge-only facility means any “treatment works treating domestic sewage” whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to Section 405(d) of the CWA, and is required to obtain a permit under 40 CFR §122.1(b)(3).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands.

Storm Water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm water discharge associated with industrial activity means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant. (See 40 CFR §122.26 (b)(14) for specifics of this definition.

Time-weighted composite means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

Toxic pollutants means any pollutant listed as toxic under Section 307 (a)(1) or, in the case of “sludge use or disposal practices” any pollutant identified in regulations implementing Section 405(d) of the CWA.

Treatment works treating domestic sewage means a POTW or any other sewage sludge or wastewater treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, “domestic sewage” includes waste and wastewater from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Regional Administrator may designate any person subject to the standards for sewage sludge use and disposal in 40 CFR Part 503 as a “treatment works treating domestic sewage”, where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 CFR Part 503.

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Waste Pile means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Waters of the United States means:

- (a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of tide;
- (b) All interstate waters, including interstate “wetlands”;
- (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, “wetlands”, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
 - (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;
 - (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - (3) Which are used or could be used for industrial purposes by industries in interstate commerce;
- (d) All impoundments of waters otherwise defined as waters of the United States under this definition;
- (e) Tributaries of waters identified in Paragraphs (a) through (d) of this definition;
- (f) The territorial sea; and
- (g) “Wetlands” adjacent to waters (other than waters that are themselves wetlands) identified in Paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA (other than cooling ponds as defined in 40 CFR §423.11(m) which also meet the criteria of this definition) are not waters of the United States.

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Whole Effluent Toxicity (WET) means the aggregate toxic effect of an effluent measured directly by a toxicity test. (See Abbreviations Section, following, for additional information.)

2. Definitions for NPDES Permit Sludge Use and Disposal Requirements.

Active sewage sludge unit is a sewage sludge unit that has not closed.

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Aerobic Digestion is the biochemical decomposition of organic matter in sewage sludge into carbon dioxide and water by microorganisms in the presence of air.

Agricultural Land is land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture.

Agronomic rate is the whole sludge application rate (dry weight basis) designed:

- (1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land; and
- (2) To minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

Air pollution control device is one or more processes used to treat the exit gas from a sewage sludge incinerator stack.

Anaerobic digestion is the biochemical decomposition of organic matter in sewage sludge into methane gas and carbon dioxide by microorganisms in the absence of air.

Annual pollutant loading rate is the maximum amount of a pollutant that can be applied to a unit area of land during a 365 day period.

Annual whole sludge application rate is the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365 day period.

Apply sewage sludge or sewage sludge applied to the land means land application of sewage sludge.

Aquifer is a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding ground water to wells or springs.

Auxiliary fuel is fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of the sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel.

Base flood is a flood that has a one percent chance of occurring in any given year (i.e. a flood with a magnitude equaled once in 100 years).

Bulk sewage sludge is sewage sludge that is not sold or given away in a bag or other container for application to the land.

Contaminate an aquifer means to introduce a substance that causes the maximum contaminant level for nitrate in 40 CFR §141.11 to be exceeded in ground water or that causes the existing concentration of nitrate in the ground water to increase when the existing concentration of nitrate in the ground water exceeds the maximum contaminant level for nitrate in 40 CFR §141.11.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 CFR §501.2, required to have an approved pretreatment program under 40 CFR §403.8 (a) (including any POTW located in a state that has elected to assume local program responsibilities pursuant to 40 CFR §403.10 (e) and any treatment works treating domestic sewage, as defined in 40 CFR § 122.2,

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classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved state programs, the Regional Administrator in conjunction with the State Director, because of the potential for sewage sludge use or disposal practice to affect public health and the environment adversely.

Control efficiency is the mass of a pollutant in the sewage sludge fed to an incinerator minus the mass of that pollutant in the exit gas from the incinerator stack divided by the mass of the pollutant in the sewage sludge fed to the incinerator.

Cover is soil or other material used to cover sewage sludge placed on an active sewage sludge unit.

Cover crop is a small grain crop, such as oats, wheat, or barley, not grown for harvest.

Cumulative pollutant loading rate is the maximum amount of inorganic pollutant that can be applied to an area of land.

Density of microorganisms is the number of microorganisms per unit mass of total solids (dry weight) in the sewage sludge.

Dispersion factor is the ratio of the increase in the ground level ambient air concentration for a pollutant at or beyond the property line of the site where the sewage sludge incinerator is located to the mass emission rate for the pollutant from the incinerator stack.

Displacement is the relative movement of any two sides of a fault measured in any direction.

Domestic septage is either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant.

Domestic sewage is waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works.

Dry weight basis means calculated on the basis of having been dried at 105 degrees Celsius (°C) until reaching a constant mass (i.e. essentially 100 percent solids content).

Fault is a fracture or zone of fractures in any materials along which strata on one side are displaced with respect to the strata on the other side.

Feed crops are crops produced primarily for consumption by animals.

Fiber crops are crops such as flax and cotton.

Final cover is the last layer of soil or other material placed on a sewage sludge unit at closure.

Fluidized bed incinerator is an enclosed device in which organic matter and inorganic matter in sewage sludge are combusted in a bed of particles suspended in the combustion chamber gas.

Food crops are crops consumed by humans. These include, but are not limited to, fruits, vegetables, and tobacco.

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Forest is a tract of land thick with trees and underbrush.

Ground water is water below the land surface in the saturated zone.

Holocene time is the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present.

Hourly average is the arithmetic mean of all the measurements taken during an hour. At least two measurements must be taken during the hour.

Incineration is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

Industrial wastewater is wastewater generated in a commercial or industrial process.

Land application is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

Land with a high potential for public exposure is land that the public uses frequently. This includes, but is not limited to, a public contact site and reclamation site located in a populated area (e.g., a construction site located in a city).

Land with low potential for public exposure is land that the public uses infrequently. This includes, but is not limited to, agricultural land, forest and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area).

Leachate collection system is a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit.

Liner is soil or synthetic material that has a hydraulic conductivity of 1×10^{-7} centimeters per second or less.

Lower explosive limit for methane gas is the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 degrees Celsius and atmospheric pressure.

Monthly average (Incineration) is the arithmetic mean of the hourly averages for the hours a sewage sludge incinerator operates during the month.

Monthly average (Land Application) is the arithmetic mean of all measurements taken during the month.

Municipality means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management agency under section 208 of the CWA, as amended. The definition includes a special district created under state law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

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Other container is either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of one metric ton or less.

Pasture is land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover.

Pathogenic organisms are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

Permitting authority is either EPA or a State with an EPA-approved sludge management program.

Person is an individual, association, partnership, corporation, municipality, State or Federal Agency, or an agent or employee thereof.

Person who prepares sewage sludge is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

pH means the logarithm of the reciprocal of the hydrogen ion concentration; a measure of the acidity or alkalinity of a liquid or solid material.

Place sewage sludge or sewage sludge placed means disposal of sewage sludge on a surface disposal site.

Pollutant (as defined in sludge disposal requirements) is an organic substance, an inorganic substance, a combination of organic and inorganic substances, or pathogenic organism that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food chain, could on the basis of information available to the Administrator of EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction) or physical deformations in either organisms or offspring of the organisms.

Pollutant limit (for sludge disposal requirements) is a numerical value that describes the amount of a pollutant allowed per unit amount of sewage sludge (e.g., milligrams per kilogram of total solids); the amount of pollutant that can be applied to a unit of land (e.g., kilograms per hectare); or the volume of the material that can be applied to the land (e.g., gallons per acre).

Public contact site is a land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.

Qualified ground water scientist is an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in ground water hydrology and related fields, as may be demonstrated by State registration, professional certification, or completion of accredited university programs, to make sound professional judgments regarding ground water monitoring, pollutant fate and transport, and corrective action.

Range land is open land with indigenous vegetation.

Reclamation site is drastically disturbed land that is reclaimed using sewage sludge. This includes, but is not limited to, strip mines and construction sites.

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Risk specific concentration is the allowable increase in the average daily ground level ambient air concentration for a pollutant from the incineration of sewage sludge at or beyond the property line of a site where the sewage sludge incinerator is located.

Runoff is rainwater, leachate, or other liquid that drains overland on any part of a land surface and runs off the land surface.

Seismic impact zone is an area that has 10 percent or greater probability that the horizontal ground level acceleration to the rock in the area exceeds 0.10 gravity once in 250 years.

Sewage sludge is a solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to: domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in treatment works.

Sewage sludge feed rate is either the average daily amount of sewage sludge fired in all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located for the number of days in a 365 day period that each sewage sludge incinerator operates, or the average daily design capacity for all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located.

Sewage sludge incinerator is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 CFR §122.2.

Sewage sludge unit boundary is the outermost perimeter of an active sewage sludge unit.

Specific oxygen uptake rate (SOUR) is the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in sewage sludge.

Stack height is the difference between the elevation of the top of a sewage sludge incinerator stack and the elevation of the ground at the base of the stack when the difference is equal to or less than 65 meters. When the difference is greater than 65 meters, stack height is the creditable stack height determined in accordance with 40 CFR §51.100 (ii).

State is one of the United States of America, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Trust Territory of the Pacific Islands, the Commonwealth of the Northern Mariana Islands, and an Indian tribe eligible for treatment as a State pursuant to regulations promulgated under the authority of section 518(e) of the CWA.

Store or storage of sewage sludge is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

Surface disposal site is an area of land that contains one or more active sewage sludge units.

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Total hydrocarbons means the organic compounds in the exit gas from a sewage sludge incinerator stack measured using a flame ionization detection instrument referenced to propane.

Total solids are the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105 degrees Celsius.

Treat or treatment of sewage sludge is the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge.

Treatment works is either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature.

Unstable area is land subject to natural or human-induced forces that may damage the structural components of an active sewage sludge unit. This includes, but is not limited to, land on which the soils are subject to mass movement.

Unstabilized solids are organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

Vector attraction is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Volatile solids is the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550 degrees Celsius in the presence of excess air.

Wet electrostatic precipitator is an air pollution control device that uses both electrical forces and water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

Wet scrubber is an air pollution control device that uses water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

3. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl ₂	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)

NPDES PART II STANDARD CONDITIONS
(January, 2007)

TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont. (Continuous)	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M ³ /day	Cubic meters per day
DO	Dissolved oxygen
kg/day	Kilograms per day
lbs/day	Pounds per day
mg/l	Milligram(s) per liter
ml/l	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH ₃ -N	Ammonia nitrogen as nitrogen
NO ₃ -N	Nitrate as nitrogen
NO ₂ -N	Nitrite as nitrogen
NO ₃ -NO ₂	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
pH	A measure of the hydrogen ion concentration. A measure of the acidity or alkalinity of a liquid or material
Surfactant	Surface-active agent

NPDES PART II STANDARD CONDITIONS
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Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
ug/l	Microgram(s) per liter
WET	“Whole effluent toxicity” is the total effect of an effluent measured directly with a toxicity test.
C-NOEC	“Chronic (Long-term Exposure Test) – No Observed Effect Concentration”. The highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.
A-NOEC	“Acute (Short-term Exposure Test) – No Observed Effect Concentration” (see C-NOEC definition).
LC ₅₀	LC ₅₀ is the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC ₅₀ = 100% is defined as a sample of undiluted effluent.
ZID	Zone of Initial Dilution means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports.

TABLE 15. SUMMARY OF TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA FOR RAINBOW TROUT, *ONCORHYNCHUS MYKISS*, AND BROOK TROUT, *SALVELINUS FONTINALIS*, ACUTE TOXICITY TESTS WITH EFFLUENTS AND RECEIVING WATERS (TEST METHOD 2019.0)¹

1. Test type:	Static non-renewal, static-renewal, or flow-through (available options)
2. Test duration:	24, 48, or 96 h (available options)
3. Temperature:	12°C ±1°C (recommended) Test temperatures must not deviate (i.e., maximum minus minimum temperature) by more than 3°C during the test (required)
4. Light quality:	Ambient laboratory illumination (recommended)
5. Light intensity:	10-20 µE/m ² /s (50-100 ft-c) (ambient laboratory levels) (recommended)
6. Photoperiod:	16 h light, 8 h darkness. Light intensity should be raised gradually over a 15 min period at the beginning of the photoperiod, and lowered gradually at the end of the photoperiod, using a dimmer switch or other suitable device. (recommended)
7. Test chamber size:	5 L (recommended minimum) (test chambers should be covered to prevent fish from jumping out)
8. Test solution volume:	4 L (recommended minimum)
9. Renewal of test solutions:	After 48 h (required minimum)
10. Age of test organisms:	Rainbow Trout: 15-30 days (after yolk sac absorption to 30 days) (required) Brook Trout: 30-60 days (required)
11. No. organisms per test chamber:	10 for effluent and receiving water tests (required minimum)
12. No. replicate chambers per concentration:	2 for effluent tests (required minimum) 4 for receiving water tests (required minimum)
13. No. organisms per concentration:	20 for effluent tests (required minimum) 40 for receiving water tests (required minimum)
14. Feeding regime:	Feeding not required
15. Test chamber cleaning:	Cleaning not required
16. Test solution aeration:	None, unless DO concentration falls below 6.0 mg/L; rate should not exceed 100 bubbles/min (recommended)

¹ For the purposes of reviewing WET test data submitted under NPDES permits, each test condition listed above is identified as required or recommended (see Subsection 12.2 for more information on test review). Additional requirements may be provided in individual permits, such as specifying a given test condition where several options are given in the method.

TABLE 15. SUMMARY OF TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA FOR RAINBOW TROUT, *ONCORHYNCHUS MYKISS*, AND BROOK TROUT, *SALVELINUS FONTINALIS*, ACUTE TOXICITY TESTS WITH EFFLUENTS AND RECEIVING WATERS (TEST METHOD 2019.0) (CONTINUED)

17. Dilution water:	Moderately hard synthetic water prepared using MILLIPORE MILLI-Q® or equivalent deionized water and reagent grade chemicals or 20% DMW (see Section 7, Dilution Water), receiving water, ground water, or synthetic water, modified to reflect receiving water hardness (available options)
18. Test concentrations:	Effluents: 5 and a control (required minimum) Receiving Waters: 100% receiving water and a control (recommended)
19. Dilution series:	Effluents: ≥ 0.5 dilution series (recommended) Receiving Waters: None, or ≥ 0.5 dilution series (recommended)
20. Endpoint:	Effluents: Mortality (required) Receiving Waters: Mortality (required)
21. Sampling and sample holding requirements:	Effluents: Grab or composite sample first used within 36 h of completion of the sampling period (required) Receiving Waters: Grab or composite sample first used within 36 h of completion of the sampling period (recommended)
22. Sample volume required:	20 L for effluents (recommended) 40 L for receiving waters (recommended)
23. Test acceptability criterion:	90% or greater survival in controls (required)

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**Responses to Comments
Public Review of Russell Biomass
NPDES Permit No. MA0040371**



U.S. Environmental Protection Agency
Region 1 (New England)
5 Post Office Square, Suite 100
Boston, MA 02109-3912

April 2012 #

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Disclaimer

This document contains verbatim comments received by the U.S. Environmental Protection Agency (EPA) on the Draft Permit issued by the Agency and the Massachusetts Department of Environmental Protection for the Russell Biomass power plant that is intended to be built in Russell, Massachusetts. The Draft Permit was made available for public comment on July 10, 2009. Some of EPA's responses reflect on changes made to the Final Permit issued in tandem with this document. It is important to note that the responses in this document might differ slightly from the language in the Final Permit. The permit language, however, has precedence and is legally binding on Russell Biomass.

Preface

The U.S. Environmental Protection Agency's New England Region (Region 1, EPA) and the Massachusetts Department of Environmental Protection (MassDEP) (together, the Agencies) are issuing a Final National Pollutant Discharge Elimination System (NPDES) Permit for the Russell Biomass power plant in Russell, Massachusetts, effective the first day of the calendar month following 60 days after signature. This document presents the Agencies' responses to the comments received on the Draft Permit (No. MA0040371) issued for Russell Biomass on July 10, 2009. The individual responses explain and support the Agencies' determinations that form the basis of the Final Permit. The comments and the Agencies' corresponding responses are organized under twelve major subject areas or sections, as shown in the Table of Contents. Preceding each individual comment/response is the individual Commenter numbers to which it correlates, as shown in the following example:

Comment # VIII.A.1	Commenter: 05
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Response # VIII.A.1	Commenter: 05
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A table is provided at the beginning of this document to help readers find comments and responses. Table 1 provides a listing of Commenter names and their affiliations, along with Commenter, response and administrative record numbers. The Responses to Comments document is available on EPA's web site at www.epa.gov/region1. Documents found in the administrative record are available upon request to EPA; please contact Sharon DeMeo at 617-918-1995 or email at demeo.sharon@epa.gov.

EPA received additional comments after the close of the public comment period. The comments received were similar to those received during the public comment period and therefore do not raise substantial new questions warranting that the Region exercise its discretion to reopen the public comment period under 40 C.F.R. § 124.14(b). While EPA has not added these comments to this Response to Comments document, EPA believes that the concerns expressed in the additional comments are adequately addressed through responses provided in this document and follow-up conversations.

Acronyms, Abbreviations, and Symbols (Selective List)

BAT	Best Available Technology
BPJ	best professional judgment
BTA	Best Technology Available
CFR	Code of Federal Regulations
cfs	cubic foot per second
CMR	Code of Massachusetts Regulations
CWA	Clean Water Act
CWIS	cooling water intake structure
DEIR	Draft Environmental Impact Report
DMR	Discharge Monitoring Report
DO	dissolved oxygen
EFH	essential fish habitat
EIR	Environmental Impact Report
ELG	effluent limitations guideline
EPA	Environmental Protection Agency
FEIR	Final Environmental Impact Report
fps	feet per second
gpm	gallons per minute
MassDEP	Massachusetts Department of Environmental Protection
MGD	million gallons per day
mg/L	milligrams per liter
MW	megawatt
NPDES	National Pollutant Discharge Elimination System
RB	Russell Biomass
RTC	Responses to Comments
TMDL	Total Maximum Daily Load
T&B	Tighe and Bond, consultant to the Permittee
TRC	total residual chlorine
TSS	total suspended solids
WMA	Water Management Act
WET	Whole Effluent Toxicity (a type of toxicity test)
WPCP	Water Pollution Control Plant
WQS	water quality standard
WWTP	Wastewater Treatment Plant
§, §§	section, sections
°C	degrees Celsius (as in 25 °C; note spacing)
°F	degrees Fahrenheit
µg/l	micrograms per liter
7Q10	the lowest 7-day average river flow that occurs once every ten years

Table 1: Commenter's Cross-reference Numbers

Commenter #	Commenter Name	Affiliation	Response Numbers
01	Bill Hardie	Russell First	IV.C.1, VII.B.1-7, VIII.D.1, XI.D.1-4
02	Piotr Parasiewicz	Rushing Rivers Last	II.D.1-7, III.A.1-9, IV.A.6-7, IV.A.8-11, IV.B.2-4, IV.E.1-7, IV.E.10, V.C.4, V.C.2-7, VII.C.1
03	Meg Sheehan et. al. ¹	Eco Law	II.A.7, II.B.14, II.C.1-8, II.D.9, III.B.1-7, IV.A.8-11, IV.A.14, IV.A.15, IV.A.16-17, IV.A.18, IV.B.12, IV.D.1-3, IV.E.1-7, IV.F.1-5, V.B.15, V.C.2-7, V.D.1-2, V.D.5-6, V.E.1-6, VI.B.1-2, VI.B.3-6, VI.B.7-9, VII.B.1-7, VIII.A.7, IX.B.6
04	John L. Berry	Fly Fishing Guide	IV.B.5-9, IV.F.1-5
05	Henry Warchol	Concerned Citizens of Russell	IV.B.10, IV.C.5, VI.B.3-6, VIII.A.1, XI.C.1-14
06	Ellen Moyer	Montgomery, MA resident	II.B.1, II.B.6-7, II.B.10-13, II.C.1-8, II.D.1-7, III.B.1-7, III.C.1-3, III.C.4-5, IV.E.1-7, IV.E.9, VI.A.9, VI.A.10, VI.A.12, VIII.C.1-4, IX.B.1-5, IX.C.1-3, IX.G.1, IX.H.1-3, IX.I.1, XI.B.1-8, XI.C.1-14
07	Gene Theroux	Southwick, MA resident	IV.A.3
08	William Gogol	BG Sporting	II.B.2, III.B.1-7, IV.A.4, IV.A.5, IV.A.6-7, IV.G.1-2, IV.G.3, V.E.1-6, VI.B.3-6, VI.G.1-2
09	Deborah Hoppe	Russell, MA resident	II.B.3-5, II.C.1, II.C.1-8, III.A.1-9, IV.A.6-7, IV.B.5-9, V.E.1-6, VI.C.1, XI.A.12, XI.B.1-8
10	Edward Ziskowski	Westfield Ward Rep	VII.B.1-7, VIII.A.2, IX.F.1, XI.C.1-14
11	Larry Ely	Pioneer Valley Relocalization Project	III.A.1-9, III.C.1-3, VIII.E.1-2, IX.A.1-2, IX.B.1-5, XI.B.1-8
12	David Glater	Greater Boston Trout Union	II.B.6-7, II.B.8, II.B.9, II.B.10-13, II.C.9, IV.E.8, IV.E.9, V.A.3-4, V.A.8, V.B.11, V.B.13, V.B.14, V.C.1, VI.A.4, VI.A.5, VI.A.6, VI.A.7, VI.A.8, VI.B.14, VI.H.1-2, VI.H.3, VII.A.1, VII.A.2, VII.A.3, VII.A.6, VII.A.7, VII.A.8, VII.A.9, VII.A.10, VIII.B.3-5, IX.D.1-2, IX.H.1-3, XI.A.12
13	Glen Ayers	The Enviro Show WXOJ-LP	II.A.2-4, II.A.5, II.B.10-13, II.C.1-8, V.E.1-6, VI.B.12-13, VI.E.1-2, VIII.C.1-4
14	Pandora Hague	Russell, MA resident	II.C.1-8, VII.B.1-7, VIII.B.1, VIII.F.1-2, IX.E.1, XI.C.1-14
15	Mary O'Connell	City Council, Westfield	VI.B.10-11, XI.C.1-14
16	Leo J. Blake, Jr.	Westfield, MA resident	IV.A.8-11, IV.A.12, IV.B.5-9, V.C.2-7, VIII.B.2, XI.A.12
17	John Kontekakis	Springfield Area Sustainable Energy Ass.	II.C.1-8, III.A.1-9, XI.C.1-14

¹ Meg Sheehan submitted testimony and comments on behalf of citizens “who use the river for recreation, nature observation, including those whose livelihoods as fishing guides and sport shop owners depends on a clean river.” These citizens are the following:

Chris Matera, Massachusetts Forest Watch
 Anne Bingham, Esq.
 Margaret E. Sheehan, Esq.
 John Kontekakis and Springfield Area Sustainable Energy Association (SASEA)
 David Glater, Esq., Greater Boston Chapter of Trout Unlimited
 Dr. Ellen Moyer, Montgomery MA
 Julie Loomis, Russell, MA
 John Chicoine, Russell MA
 Jana Chicoine, Russell MA
 William Sammons
 Claudia N. Hurley and G. Michael Hurley
 Henry Warchol, Westfield MA
 John Berry, Streamside Flyfishing, Russell MA
 William and Marie Gogol, B&G Sporting Goods, Russell MA

18	Alice Taverna	Russell, MA resident	XI.A12
19	Ann Merritt	Russell, MA resident	IV.H.1, XI.A12, XI.D.1-4
21	Jana Chicoine	Concerned Citizens of Russell	III.A.1-9, IV.B.5-9, IV.E.1-7, VI.G.11, XI.B.1-8
22	Joe & Janice Malcorsky	Montgomery, MA resident	II.A.2-4, III.A.1-9, VIII.B.3-5, XI.B.1-8
23	Beth Adams	Concerned Citizens of Franklin County –HSF	IX.C.1-3, XI.B.1-8
24	Nancy Mezger	Russell, MA resident	III.A.1-9
25	Doris Atkinson	Tighe & Bond/ Russell Biomass	V.A.5, V.B.2-3, V.B.4-5, V.B.7, V.B.8-9, V.B.10, VI.D.1, VI.G.10, VI.H.4-5, X.3, XI.C.1-14
26	Henry & Aline Euler	Russell, MA resident	II.B.3-5, II.C.1-8, III.B.1-7, IV.C.2-4, IV.I.1, IV.I.2, IV.I.3, V.E.1-6, VIII.B.3-5, XI.A12
27	Peter M. Schilling	MA/RI Council of Trout Unlimited	V.C.2-7, V.D.3, V.D.4, VII.A.13, VII.A.14-15, VII.A.16, VII.A.17, VII.A.18, VII.A.19, VII.A.20, VII.A.21, VII.A.22, VII.A.23, VII.B.1-7, VII.B.8, XI.C.1-14
28	Meredyth Babcock	Becket, MA resident	II.D.1-7, XI.A12
29	Sheila A. Mizejewski	Russell MA resident	IV.A.1-2, IV.B.1, IV.B.2-4, V.B.9, XI.C.1-14
30	Mary S. Booth, PhD	Pelham, MA resident	II.D.1-7, IV.B.11, V.A.6-7, V.D.1-2, VI.B.3-6, VI.D.2
31	Andrea Donlon	Conn. River Watershed Council, Inc.	II.A.6, II.D.8, IV.C.2-4, IV.E.1-7, V.A.1, V.A.2, V.A.3-4, V.B.2-3, V.B.4-5, V.B.6, V.B.8-9, V.B.12, VI.A.1, VI.A.2, VI.A.3, VI.B.1-2, VI.B.7-9, VI.B.10-11, VI.B.12-13, VI.E.3-4, VI.F.1, VI.G.1-2, VI.G.3, VI.G.4, VI.G.5, VI.G.6, VI.G.7, VI.G.8, VI.G.9, VI.G.12, VI.H.1-2, VI.H.4-5, VIII.A.4, X.1, X.2, XI.A12
32	Patricia O'Neill	Bandford, MA resident	III.A.1, III.A.1-9, IX.C.1-3, XI.B.1-8
33	Rob Moir, PhD et. al. ²	Ocean River Institute	III.B.1-7, IV.A.13, IV.B.2-4, IV.B.5-9, IV.D.1-3, VI.A.11, VIII.B.6, XI.C.1-14
34	Harper Dangler	Ocean River Institute	V.E.1-6
35	Ryan Moir	Ocean River Institute	XII
36	Thomas Chapman	U.S. Fish and Wildlife Service	IV.C.2-4, V.B.1, VII.A.4, VII.A.5, VII.A.11, VII.A.12, VIII.A.3, VIII.A.5, VIII.A.6, XI.C.1-14

² Rob and Ryan Moir submitted testimony and comments on behalf of many who logged onto the Ocean River Institute website and added signatures to its comment letter on the Russell Biomass Draft Permit. Section XII of this Response to Comments document includes the additional comments that were submitted on-line to supplement the aforementioned comment letter, along with the names of those who commented. Appendix A is a list of those who signed the Ocean Rivers Institute on-line comment letter without contributing additional comments.

I. Summary

A. Introduction

The U.S. Environmental Protection Agency's New England Region (EPA, Region 1) and the Massachusetts Department of Environmental Protection (MassDEP) (together, the Agencies) are issuing a Final National Pollutant Discharge Elimination System (NPDES) Permit for the Russell Biomass power plant in Russell, Massachusetts. This permit is being issued under the Federal Clean Water Act (CWA), 33 U.S.C., §§ 1251 *et. seq.*, and the Massachusetts Clean Water Act, M.G.L. Ch. 21, §§ 26-35. The facility is to be built on a 20 acre lot adjacent to the Westfield River in Russell, Massachusetts and will be operated by Russell Biomass, LLC (referred to hereafter as either the Permittee, RB, or Russell Biomass).

Russell Biomass will burn wood chips as fuel to generate electricity. Russell Biomass will discharge pollutants to and withdraw water from the Westfield River. The facility's discharges of pollutants and cooling water withdrawals are subject to various requirements under Federal law and the laws of the Commonwealth of Massachusetts.

In accordance with the provisions of 40 CFR 124.17, this document presents the Agencies responses to comments received on the Draft NPDES Permit (No. MA0040371) issued for Russell Biomass. The responses to comments explain and support the Agencies determinations that form the basis of the Final Permit.

On July 10, 2009, EPA and the MassDEP jointly issued the new Draft NPDES Permit for Russell Biomass under Federal and State law. At that time, the Agencies opened a 39-day public comment period on the Draft Permit, scheduled to end on August 18, 2009. EPA regulations require that comment periods extend a minimum of 30 days. In addition to inviting written comments, EPA and the MassDEP held a public information meeting in Russell, where the Agencies made a presentation, answered questions, and listened to views presented by the public. The Agencies then held a formal public hearing to receive comments on the Draft Permit.

EPA received numerous sets of written comments on the Draft Permit, comprising hundreds of pages of materials. EPA and MassDEP also received oral comments from many individuals at the public hearing. Some individuals provided both written and oral comments. The comments presented a wide range of viewpoints.

EPA and MassDEP greatly appreciate the time, effort, information, and expertise that the Commenters, including the Permittee, have contributed to improve the development of this Final Permit. EPA has given careful consideration to the comments and information it has received. Thus, the permit has been thoroughly investigated from many perspectives. EPA's commitment to considering all the information and viewpoints presented resulted in a lengthy decision-making process for the Final Permit. Indeed, considering and responding to certain comments required detailed analysis, as presented in this Responses to Comments document.

As previously stated, this permit is being jointly issued by EPA and MassDEP. EPA will generally present responses to comments as EPA's, unless there are particular issues in which MassDEP plays

a unique role beyond being a co-issuer of this permit. For most responses where EPA is the agency presenting the response, MassDEP's certification and joint issuance of the permit will establish that the Department agrees with EPA's responses.

In addition, EPA sought review of the permit by various Federal and State government agencies in accordance with applicable law. Pursuant to CWA § 401(a)(1), the MassDEP has certified that the Final Permit's limits satisfy Massachusetts' water quality standards. In addition, the National Marine Fisheries Service has agreed that the permit satisfies the Essential Fish Habitat requirements of the Magnuson-Stevens Fishery Conservation and Management Act, as well as the Endangered Species Act.

EPA and the MassDEP believe that the extensive time and effort invested in this process have produced a Final Permit consistent with Federal and State law and supported by sound science and public policy. EPA believes that compliance with this permit will protect the ecosystem of the Westfield River, an important public resource.

B. Changes Made in the Final Permit

The Final Permit is substantially the same as the Draft Permit that was available for public comment. Although EPA's decision-making process has benefited from the various comments and additional information submitted by Commenters, the information and arguments presented did not raise any substantial new questions concerning the permit. Many of the concerns raised by the Commenters had already been addressed in EPA's original Fact Sheet while other concerns were not relevant to NPDES jurisdiction or the NPDES process. EPA did, however, improve certain analyses in response to comments. These improvements are detailed in this document and continue to support EPA's determinations. As a result of comments on the Draft Permit, the Agencies have revised certain permit conditions, improved certain analyses and made certain clarifications. These improvements and changes are detailed in this document and reflected in the Final Permit. A summary of the changes made in the Final Permit is presented below. The analyses underlying these changes are explained in the responses to comments that follow. Since the Fact Sheet is a final document, no changes were made to the Fact Sheet. Instead, Fact Sheet comments were noted and responses to them are included in this document.

The following changes have been made from the Draft Permit to the Final Permit. Where applicable, relevant sections of the response document where the following changes have been discussed have been included for each item. The specific changes from the draft to the final are shown as italics and strikethroughs.

Final Permit Page #/ Permit Changes from Draft to Final	Response to Comment #
Page 1	
Number of pages of permit has changed from draft	administrative change
Included Table 15 of EPA's Test Method 2019.0 as attachment	V.I.F.1
David Ferris, new Director at MassDEP	administrative change
Page 2	

Added influent (intake water) flow reporting	VI.B.3-6
Existing footnote 4 was also included for the measurement frequency of free available chlorine in the table	for purpose of clarification
Added lbs/day phosphorus reporting	VI.B.3-6, VI.B.7-9.
Added average monthly rise in phosphorus load limit of no detectable difference	VI.B. 3-6, VI.B.7-9
Added total aluminum monitoring at Outfall 001, upstream and downstream in the Westfield River monthly	VI.D.2
Removed “24 hour” from composite designation for the WET testing requirements within the table because it is unnecessary. Definition of composite is found on page 10 of Part II Standard Conditions	administrative change
Page 3	
Added footnotes 6, 7, and 8 to clarify new phosphorus and aluminum requirements	VI.B and VI.D.2
Page 4	
Part I.A.1.d – changed total residual oxidants to total residual chlorine	for purpose of clarification
Part I.A.1.d – added word “calendar”	II.B.9
Added Part I.A.1.f and g to clarify new aluminum requirements including locations for monitoring and the requirement to prepare and submit a study of the exceedances of the chronic State Water Quality Standard (WQS) for aluminum in the Westfield River	VI.D.2
Added instructions for requesting reduction in aluminum monitoring at Part I.A.1.h	VI.D.2
Page 5	
Replaced Attachment A - Freshwater Acute Toxicity Test Procedure and Protocol with the updated February 2011 version	VI.F.1
WET testing changed to include Rainbow Trout for two years (following the appropriate Test Method 2019.0)	VI.F.1
Page 6	
Removed phosphorus monitoring requirements for Outfall 003	VI.B.3-6
Page 7	
Added “or within 0.5 units of rainfall pH” in table for clarification	VI.G.10
Added quarterly monitoring and maximum daily reporting requirements for turbidity at Outfall 004 and 005 and upstream in the Westfield River	VI.G.5
Page 8	
Replaced “upstream” with “rainfall” in Part I.A.4.e.	VI.G.10

Added new reporting requirement for when there is an actual discharge to the river from Outfall 005 at Part I.A.4 g.	VI.G.8
Added monitoring and reporting of priority pollutants and glyphosate within the second year and within the fifth year the facility is operating at Part I.A.4.h.	VI.G.12 and IX.I.1
Page 11	
Changed Part I.A.5.g as follows: “The Permittee shall amend and update the SWPPP within no less than 14 days of prior to any changes at the facility that <i>might</i> 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 <i>other</i> activities at the facility. ÷ <i>The Permittee also shall amend and update the SWPPP within 14 days of a release of a reportable quantity of pollutants as described in 40 CFR §302; or a determination...</i> ”	VI.H.3
Added to Part I.A.6.a as follows: “The Permittee may propose to conduct feasibility studies involving new chemicals not currently approved for water discharge, <i>including any coagulants proposed as part of the incoming water treatment system.</i> The Permittee shall gain approval from EPA and MassDEP before any such studies take place. <i>No study may involve actual discharges of the proposed new chemicals into the Westfield River.</i> ”	VI.A.6
Page 12	
Replaced “jeopardize” with “interfere with the attainment of” in Part I.A.7.a.	IV.A.12
Page 13	
Changed Part.I.A.9.a. as follows: “During the <i>first fall the plant is operating after permit issuance</i> year of operation , the Permittee shall conduct a thermal plume characterization study for in-stream temperatures corresponding to peak summer operating conditions. ”	V.B.1, V.B.2-3, and V.B.10
Changed Part I.A.9.a.i as follows: “The Permittee shall continuously monitor temperatures for two consecutive weeks <i>between September 15th and October 31st</i> , representative of high summer temperatures, based on available weather data and when the maximum daily flow is 885,015 gpd, to the extent practicable.	V.B.1, V.B.2-3, and V.B.10
Changed Part.I.A.9.a.ii as follows: “The Permittee shall monitor the ambient receiving water temperature upstream of outfall 001 <i>the discharge location</i> by establishing three, equally spaced temperature stations equipped with temperature data loggers along a bank-to-bank transect at a location equidistant between <i>downstream</i> of the Indian River Hydro dam and outfall 001 <i>at a depth and flow representative of, but out of the influence of, the discharge location</i> (locations of	V.A.5, V.B.10, V.B.4-5 and V.D.3

temperature stations may be estimated in the field). <i>An additional temperature station shall be established on the west bank of the river directly across from the dog leg approximately 450 feet downstream of the discharge location. (locations of temperature stations may be estimated in the field)."</i>	
Changed Part I.A.9.a.iii as follows: "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 <i>the discharge location outfall 001</i> and extending 50 feet; and (2) approximately every 50 feet between 50 feet and 250 feet downstream of <i>the discharge location outfall 001</i> . Each transect shall include three temperature stations equipped with temperature data loggers: one station <i>at the centerline of streamflow</i> , one within 5 feet of the east bank, a second station approximately 15 feet from the east bank , and a third <i>within 5 feet of the west bank approximately 22 feet from the east bank</i> (locations to may be estimated in the field). At each of the three stations, <i>continuous temperature monitors (measuring in 15-minute intervals (to the nearest 0.5°F) shall be monitored at mid-depth placed between the river bottom and mid-depth. Data loggers shall record temperature at 15 minute intervals.</i> "	V.A.5, V.B.10, V.B.8-9 and V.B.7
Added Part I.A.9.a.iv, which is a requirement to collect daily samples for dissolved oxygen at each established temperature station between the hours of 10:00 am and 2:00 pm	IV.A.13
Removed "In addition data loggers shall record temperature at 15 minute intervals..." from Part I.A.9.a.v because the condition was already included in Part I.A.9.a.iii.	clarification change
Changed Part I.A.9.a.v to include dissolved oxygen monitoring results and as follows: "The Permittee shall report <i>hourly</i> ambient air temperature; and water surface elevation at each station. In addition, data loggers shall record temperature at 15 minute intervals and t The Permittee shall report hourly average and maximum <i>river</i> temperatures <i>at each station. In addition, the Permittee shall report hourly average and maximum discharge temperature and flow, daily stream flow, and submit all recorded temperature data.</i>	IV.A.13, V.B.10, and V.B.11
Deleted the following from Part I.A.9.a.v: "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."	IV.B.10
Removed "thermal" in Part I.A.9.a.vi because monitoring also includes dissolved oxygen	clarification change
Page 14	
Added monthly and weekly CWIS inspection schedule to Part I.A.10.b	VIII.A.6
Page 15	

Removed “waste water pollutants from” Part I.A.11.c	VI.A.7
Pages 17-18	
Replaced Part I.B Monitoring and Reporting instructions with updated language	administrative change
Page 19	
Replaced Part I.C State Permit Conditions with updated language	administrative change

C. Organization of Responses and Availability of Administrative Record

Organizing these responses to comments in a “user-friendly” manner has been a difficult challenge for a number of reasons. First, the Agency received a large number of comments, some of which had voluminous reference material. Second, the comments addressed a wide variety of complex issues related to the permit. Third, while some comments clearly addressed specific conditions, others addressed issues related to the permit without specifying to which specific permit conditions they pertained. Finally, other comments addressed issues that were relevant to the general biomass industry.

EPA has organized the responses to comments in this document by subject matter. As follows: (1) Summary; (2) Permit Procedures and Administration; (3) Economics; (4) Westfield River; (5) Thermal; (6) Other Permit Monitoring Requirements and Effluent Limits; (7) EFH and ESA; (8) 316(b) Cooling Water Intake Structure; (9) Other Potential Impacts; (10) Comments on Fact Sheet; (11) General Commentary and Opposition; and (12) Comments from Ocean River Institute Concerned Citizens.

All comments presented in this document have been reproduced verbatim from each comment letter and have not been paraphrased. It should also be noted that, EPA has combined many similar individual comments for one response to try to help reasonably streamline the process.

All documents cited in this document are included in the Administrative Record for the Final Permit decision. All public comments on the Draft Permit, including transcripts from the public hearing, are also included in the Administrative Record. Furthermore, certain new materials submitted to EPA regarding the permit after close of the public comment period, or gathered or developed by EPA in responding to comments, are also included in the Administrative Record. The Administrative Record is available for review at the offices of EPA-New England at 5 Post Office Square, Boston, Massachusetts. Electronic copies of the Final Permit and this RTC document are available at EPA Region 1’s web site at: www.epa.gov/region1. Copies of the Final Permit also may be obtained by writing or calling Sharon DeMeo at EPA’s Industrial Permits Branch (CIP), Office of Ecosystem Protection, 5 Post Office Square, Suite 100, Boston, MA 02109-3912; email: demeo.sharon@epa.gov; telephone: (617) 918-1995.

II. Permit Procedures and Administration

A. CWA/NPDES/WQS

Comment # II.A.1

Commenter: 32

“Please do not grant the Russell BioMass Company a permit in order to draw plant in-take water out of our river. That technology is already absolutely obsolete. The federal Clean Water act, soon to be revised, provides for little or no in-take water to be drawn from our nations rivers nor lakes.”

Response # II.A.1

Commenter: 32

EPA disagrees that closed cycle cooling is an obsolete technology. In fact, on December 18, 2001, EPA promulgated final regulations to implement § 316(b) of the CWA for *new facilities* that use cooling water intake structures (CWISs) to withdraw water from rivers, streams, lakes, reservoirs, estuaries, oceans, or other waters of the United States for cooling purposes. *See* 66 Fed. Reg. 65338 (Dec. 18, 2001). These regulations are promulgated at 40 C.F.R. Part 125, Subpart I, and are collectively referred to as the “Phase I Rule.” The Phase I Rule establishes national, technology-based performance requirements applicable to the location, design, construction, and capacity of cooling water intake structures at new facilities. *See* 40 C.F.R. § 125.80(a). The Phase I Rule specifies, among other things, that a reduction in total design intake flow commensurate with that which can be attained by a closed-cycle, recirculating cooling water system constitutes the best technology available (BTA) for new facilities withdrawing more than 10 MGD. *See* 40 C.F.R. § 125.84(b)(1); 66 Fed. Reg. at 65273. Russell Biomass has affirmatively chosen upfront to use closed-cycle cooling, a technology that successfully minimizes CWIS impacts by greatly reducing intake flow (by as much as 98 percent) over “open cycle” cooling, and a technology that EPA has determined represents the BTA for new facilities covered by Phase I. *See* 40 C.F.R. § 125.84(b)(1). *Also see* responses to comments (RTC) in Section VIII.

Comment # II.A.2

Commenter: 22

“NOTHING should be put in or taken out [of the river]. The Clean Water Act does not legally allow this. If they cannot pass air quality with air cooling than the plant should not be allowed. I know coal fueled power plants must pass new stringent air quality standards. If this affects air quality permits the company must be made to comply or be denied a permit.”

Comment # II.A.3

Commenter: 13

“Since this is a new source, it should not be allowed to increase the pollutant discharge to the Westfield River. The main goal of the CWA and WQA is to prevent and reduce the pollution of our rivers. This draft authorization is simply a “permit to pollute” the Westfield River. This proposal is clearly in violation of the spirit and intent of these Acts, since it is a new source that would dramatically degrade the Wild and Scenic water quality of the river.”

Comment # II.A.4

Commenter: 13

“ I'm a -- let's see, a registered sanitarian, a certified health officer in Massachusetts, a certified public water supply operator and a Massachusetts licensed wastewater treatment plant operator, amongst other things. I've obtained nine public health certifications within the State of Massachusetts... Let me just start off by saying that I worked for the equivalent of the MassDEP in the State of

Pennsylvania in the 1980s and I understand very well the permitting process, the regulatory process and I'm very familiar with the Clean Water Act and other regulations. I worked specifically under the Resource Conservation & Recovery Act in Pennsylvania, but I understand the political process of permitting very well. I understand that the Clean Water Act and the Water Quality Act requires discharge elimination. That is part of the NPDES. The D and E stands for discharge elimination. It's a process of reducing the pollution going into the rivers. In this case, this is essentially what's called a permit to pollute. You cannot discharge pollutants into a river without a permit and the EPA in this state will be issuing Russell Biomass a permit to pollute. It's not a discharge elimination program, it's a permit to add pollution. So it's a pollution enhancement permit, but that's the reality of the situation here. The main goal of the discharge elimination system is to clean up the rivers. Now this will not be cleaning this river. There is no one who can say that what we're proposing tonight, this permit, is going to enhance, clean up, facilitate the restoration of the river. It's going to do the opposite."

Response# II.A.2-4	Commenter's: 22 and 13
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The requirement that all pollutant discharges be eliminated is one of several goals of the Clean Water Act (CWA); however, it is not being required at present. What is required is that all point source discharges meet applicable standards, including state water quality standards. While it is true that the elimination of wastewater discharges was Congress's goal, it is also understood that discharges are still necessary, at least for some time in the future. What perhaps is of most importance now is that the discharges are controlled. This is accomplished through the National Pollutant Discharge Elimination System (NPDES) permitting program (Sec. 402). The New Source Performance Standards (NSPS) and Pretreatment Standards for New Sources (PSNS), which set the level of allowable pollutant discharges from specific categories of new industrial facilities, is evidence that new dischargers are allowed. Furthermore, these NSPS and PSNS do not require that all pollutants are eliminated. *See* CWA sec. 306(a), 33 U.S.C. § 1316(a) and 40 CFR Subchapter N (Parts 405-499). EPA disagrees that the withdrawal and discharges from the proposed Russell Biomass facility, restricted by the parameters and limitations of the Final Permit, will degrade the water quality of the Westfield River. After careful consideration of the application materials pertaining to the proposed Russell Biomass facility, EPA developed the Russell Biomass Permit to comply with the goals and policies of the CWA and determined that the conditions required in the Final Permit will ensure that the high water quality of the Westfield River will be maintained.

See RTC's in Section VIII.B regarding the air quality aspects of air cooling and response to comment VIII.C.1-4, which addresses why zero-liquid discharge is not required.

Comment # II.A.5	Commenter: 13
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"This draft permit is so deficient and unacceptable that it must be significantly re-drafted, thereby necessitating an additional comment period on the new draft. To do otherwise will be to invite an appeal of this permit on the grounds of abuse of process. Because of the extensive changes necessary, the new proposed draft authorization should be subjected to another public hearing and comment period. The hearing held on 8/13/09 was inadequate and insufficiently addressed the technology selection process, the development of water quality parameters, the monitoring scheme, and many other aspects of this proposal. Procedurally this authorization fails to comply with the CWA and WQA standards and can not stand as the only public input process for this highly controversial proposal. Public opposition to this discharge permit is widespread and intense. The EPA and the DEP

have a duty to fully involve the concerned citizens in the development and permitting of this significant new discharge to the Wild and Scenic Westfield River.”

Response # II.A.5	Commenter: 13
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EPA did not receive information that supports the supposition that the Draft Permit was deficient or unacceptable to require re-drafting along with an additional comment period and hearing. EPA has not made extensive changes between the Draft and Final Permits. Some changes made in the Final Permit are for clarification purposes or corrections of typographical errors, while the remaining revised permit conditions in the Final Permit are considered a logical outgrowth of the Draft Permit. Neither the revised permit conditions nor any new information related to those conditions, which was added to the record in response to comments, raise significant new questions that would warrant the Region exercising its discretion to reopen the public comment period under 40 C.F.R. §124.14(b). The purpose of the hearing held on August 13, 2009 was to give a forum for the public to communicate views and comments on the Draft NPDES permit. Everyone at the hearing who wanted to speak was given an opportunity to speak and comments were accepted for a 39-day period after the release of the Draft Permit. Before the hearing, EPA provided an informal information session to provide a brief overview of the Draft Permit limitations and requirements and to answer questions. The Fact Sheet, which accompanied the Draft Permit, provides a description of the facility; type and quantities of wastes; the basis for the Draft Permit conditions; and significant factual, legal and policy questions considered in preparing the Draft Permit.

Comment # II.A.6	Commenter: 31
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“As stated in 314 CMR 4.01(4), “The objective of 33 U.S.C. §1251 *et seq.* is the restoration and maintenance of the chemical, physical and biological integrity of the Nation’s waters.” The Massachusetts Surface Water Quality Standards contain regulations “necessary to achieve the designated uses and maintain existing water quality including, where appropriate, the prohibition of discharges.” We are not entirely clear that the permit as drafted will restore and maintain the Westfield River, as required by the Clean Water Act, and we think it may be appropriate to prohibit the discharge of chemicals that will contribute to the existing impairments. Depending on results of the thermal study, it may also be appropriate to prohibit the thermal discharge as well. Certainly, if the facility was using dry cooling, some of the impacts from water withdrawal and discharge would be far less.”

Response # II.A.6	Commenter: 31
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The broad goal of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water." Again, after careful and extensive consideration of the materials pertaining to the proposed Russell Biomass facility, EPA believes that the restrictions and limitations required by the Final Permit ensure that the high water quality of the Westfield River will be preserved, thereby protecting the integrity of the river’s aquatic ecosystem. If information becomes available which indicates that new or more stringent permit limits are needed to meet water quality standards, the permit will be modified. Furthermore, a permit may be terminated if, among other things, the permittee is in noncompliance with any condition of their permit or if the permitted activity endangers human health or the environment. *See* 40 CFR §122.62(b).

Also see responses to comments in Section VI.B for phosphorus and Section VI.D for aluminum restrictions, as well as Section V, which addresses comments on the thermal discharge and Section VIII.B for responses to comments on dry cooling.

Comment # II.A.7

Commenter: 03

“Slides 5- August 2005– this photo shows brown and green algae forming a slime over the river bed which has a bare trickle, about 3 miles down stream of the site at the Westfield. This is not a “restored and maintained” river as required by the federal CWA.

Slide 6 – CWA says EPA and state must protect and maintain USES of the River – that’s a must do. This River is “designated” for recreation, swimming, fishing, aquatic habitat are so these uses SHALL be maintained and protected by federal law.”

Response # II.A.7

Commenter: 03

Although, EPA could not discern the actual flow from the photograph presented, it is typical to see the lowest yearly river flows during the summer months, which coincides with the peak algal growing season. EPA believes that the restrictions and limitations required by the Final Permit ensure that the water quality of the Westfield River will be preserved, and the integrity of the river’s aquatic ecosystem will be protected. *Also see* other responses to comments in this Section and for discussions regarding phosphorus, *see* Section VI.B.

B. Enforcement

Comment # II.B.1

Commenter: 06

“So I’m also concerned about the lack of enforcement. I see a lot of Biomass plants in Maine. They violate day-after-day, year-after-year. This is more air permit violations. They never shut down. They get nastigrams, they get a little slap on the wrist, pay a couple thousand dollars, pen pals back and forth, oh, you’re being bad, I will try to better, and then it just goes back and forth, and nothing happens. So I’m very concerned that a permit of any kind is a permit to do anything and everything, and there will be no enforcement. So I’m begging you to, please, have the wisdom and the courage to deny the permit flat out.”

Response # II.B.1

Commenter: 06

EPA understands that there is high level of public concern about the need for increased enforcement of environmental laws and permits. In an effort to protect the water quality in Massachusetts, the Region issues protective permits and takes appropriate enforcement actions.

Comment # II.B.2

Commenter: 08

“We spend 30, 40 days a year on the river, cleaning this river. 30 years I’ve been doing this. We’ve seen the good, the bad and the ugly. We’ve tried to work with businesses through the years, but one of the things I found about business, they’re not monitoring. You know, Texon up here draws water up here. When they draw it, it’s just like John says, you can be fishing that river and you’ll have four feet of water. Next day you’ve got six inches or eight inches of water. Now if they’re doing that at the same time that the Bio plant wants water, where’s the water going to come from? There’s no checks and balances. And they’re going to say, well, it’s going to be monitored. But it’s never monitored. It’s too late. It’s just like when Strathmore, when they polluted the river and they killed

all the fish, employee error. It's fine to say employee error, but you just wake up, 30 years of hard work, and you say employee error.”

Response # II.B.2

Commenter: 08

EPA is aware of both the considerable effort afforded to and the vested public interest in maintaining the water quality of the Westfield River. The Final Permit includes extensive and explicit monitoring requirements that were developed to confirm that the discharges from the Russell Biomass facility will meet the Permit limitations and therefore not cause exceedances of water quality standards. If monitoring is not conducted in accordance with the permit requirements and/or permit limits are exceeded, the Permittee will be subject to enforcement action. The discussion regarding the reported low river flow events is found in Section IV.B of this RTC document.

Comment # II.B.3

Commenter: 09

“Also, I request that you do make specific guidelines in the beginning. You said you had guidelines for other types of plants and so forth. Well, when Biomass came out, there really wasn't specific ones and you guys had to sort of work your way around and create it. I would appreciate it if Biomass is going to come and be here to stay, because there's a lot of funding for it, I wish it wasn't, I lost my job, but they have funding to burn my town out, please create some system that will keep them in order. It doesn't mean -- you know, a lot of us don't want it, doesn't mean it's not going to happen here. So at least make it, you know, something that's going to work right. Learn from our past mistakes. A lot of people mentioned the Westfield River Paper Company was there and so forth, and everybody can remember the river running green and blue and so forth, depending on the day. But don't say, let's put another plant in because we lived with that. If you put in a business there, yes, we need business, but make sure it's not going to pollute our town. Learn from those mistakes and get better at it. We only have one planet, we need to protect it.”

Comment # II.B.4

Commenter: 26

“So many unanswered questions. So much chance for harm to the beautiful Westfield River. What guarantees can you make to assure the public? What precautions and stipulations will be placed in the permit to ensure public health and safety?”

Comment # II.B.5

Commenter: 09

“Use the strickest and latest technology. Don't manipulate them to make the plant pass.”

Response# II.B.3-5

Commenter's: 09 and 26

As explained in the Fact Sheet, “the proposed Russell Biomass facility does not fall within the Steam Electric Power Generating Point Source Category only because it relies on biomass for its fuel source rather than a fossil or nuclear fuel. Nevertheless, EPA concludes that it is reasonable and appropriate to consider the ELGs for the Steam Electric Power Generating Point Source Category (the Steam Electric ELGs) in developing BPJ-based BAT limits for the Russell Biomass facility given that it meets the other criteria for classification under this industrial category. *See* 40 C.F.R. § 423.10.¹”

¹ The Steam Electric Power Generating Point Source Category includes facilities whose discharges result “from the operation of a generating unit by an establishment primarily engaged in the generation of electricity for distribution and sale which results primarily from a process utilizing fossil-type fuel (coal, oil, or gas) or nuclear fuel in conjunction with a thermal cycle employing the steam water system as the thermodynamic medium.” 40 C.F.R. § 423.10.

EPA considered both the BAT and NSPS included in the Steam Electric ELGs, although the proposed Russell Biomass facility is not a “new source” under the CWA. EPA concluded on a best professional judgment basis that the BAT and NSPS priority pollutant limits from the ELGs are appropriate to apply to the Russell Biomass facility.

In developing this permit, EPA has carefully and objectively evaluated application materials, applicable regulations and other information so that the conditions required in the Final Permit ensure that the high water quality of the Westfield River will be preserved. The Fact Sheet, which accompanied the Draft Permit and can be found on the EPA, Region I website at: http://www.epa.gov/region1/npdes/permits_listing_ma.html, provides a description of the facility; type and quantities of wastes; the basis for the permit conditions; and significant factual, legal and policy questions considered in preparing the permit. These responses to comments provide a discussion of any changes made between the Draft and Final Permits. The Final Permit includes extensive monitoring and reporting requirements for the purpose of determining if the company is complying with the limitations of this permit. Furthermore, EPA may take several different actions depending on the frequency and/or severity of any violation. Part II Section A.1 of the Permit states that “[a]ny permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.”

Also refer to Section VIII.B and RTC VIII.C.1-4, which addresses comments on technology; air cooling and zero liquid discharge, respectively.

Comment # II.B.6	Commenter: 12
“Part I.B., Monitoring and Reporting (page 14 of 15). There is no requirement to modify or cease plant operations until the source of the violation is identified and operational changes made to assure that it will not recur.”	
Comment # II.B.7	Commenter: 06
“ <u>Presumption of Shutdown Unless All is in Order</u> . There should be a presumption of incinerator shutdown unless everything is documented to be as it should be. Any violation, no matter how minor (even paperwork violations) should be followed by immediate shutdown until the situation is thoroughly documented to be corrected. There should be zero tolerance when it comes to protecting the Westfield River. All too often, facilities violate and violate day after day and year after year with the only consequence being some correspondence back and forth with regulatory agencies and maybe a small fine that is little more than an expense of doing business. This will not be acceptable. The river steward should control the on/off switch. It’s like driving – you have your car registered, inspected, and insured and your driver’s license in order, otherwise you do not get behind that wheel – it is privilege, not a right, to operate the vehicle (or incinerator). There should be automatic stipulated penalties for all violations.”	
Response # II.B.6-7	Commenter’s: 06 and 12
A NPDES permit is not designed to shut a facility down but to allow it to operate only under certain conditions. Generally, exceedances of permit conditions are violations, which are dealt with by EPA’s enforcement group. EPA also has the authority to terminate a NPDES permit if, among other things, the permittee is not in compliance with their permit limitations and requirements. Part II	

Section A.1 of the Russell Biomass Final Permit explains the Permittee's duty to comply with all the conditions of their permit and states that "[a]ny permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; **for permit termination**, revocation and reissuance, or modification; or for denial of a permit renewal application." (emphasis added)

Comment # II.B.8

Commenter: 12

"With respect to thermal impacts of the plant's discharge flow, the permit adopts an experimental approach -- operate the plant and see what happens to fish in the river. The draft permit requires the Permittee to conduct "a thermal plume characterization study for in-stream temperatures corresponding to peak summer operating conditions during the first year of plant operation. Paragraph 9. a. (page 10 of 15). However, even if this study were to indicate that the plant's thermal discharge "causes or contributes to an exceedance of any State water quality criterion" such a finding may only result in the permit being "modified , or alternatively, revoked and reissued to incorporate additional and/or revised requirements." Paragraph 9. v. (page 11 of 15). Outright revocation of the permit, even on a temporary basis, is not presented as a possibility." Here again, the Permittee is in charge of data-gathering and preparation of the study -- there is no requirement to employ an outside professional technical laboratory to conduct this study."

Response # II.B.8

Commenter: 12

The commenter is correct, Paragraph 9. v. (page 11 of 15) does not provide a mechanism to terminate the permit based on the thermal plume characterization study results because EPA did not anticipate a scenario in which the facility would be required to shut down operations entirely based on the temperature study. For an explanation of how the thermal limitations and requirements were developed, *see* Section 6.3.1 of the Fact Sheet and Section V of this Response to Comments document. It is also true that if the plume characterization study shows that new or more stringent permit limits are needed to meet water quality standards, the permit will be modified accordingly. Furthermore, as stated in the previous response to comment above, EPA does have the authority to terminate the Russell Biomass Permit if, among other things, they are not in compliance with their permit limitations and requirements. For the discussion regarding self-monitoring, *see* RTC II.C.1-6 below.

Comment # II.B.9

Commenter: 12

"Page 2 of 15: Paragraph 1 (Table) In general, the draft permit's limited and infrequent effluent monitoring requirements prescribed in this table allow discharge limitations to be exceeded on those days when no monitoring is performed. The permit should require that all effluents be monitored more frequently, even continuously.

Further, the permit should establish a requirement that all monitoring and testing be conducted by a qualified professional laboratory that is paid by the Permittee but is not under the Permittee's control. Free Available Chlorine: footnote 2 applies to this line item. This footnote states that a chlorine release may not exceed two hours. However, there is no limit on the number of chlorine releases that may occur in a 24 hour period. This should be clarified. Footnote 3 also applies to this line item. It states that the limit (0. 5 mg per liter) "shall not be exceeded at any time (instantaneous maximum)". However, the monitoring requirement calls for only three "grabs" per discharge. If the limit may not be exceeded at any time, continuous monitoring should be required."

Response # II.B.9

Commenter: 12

Please refer to response II.C.1-8 for the discussion about self-monitoring requirements and response II.C.9 for information about monitoring frequencies. The word “calendar” has been added for clarification of Part I.A.1.d of the Permit, which specifies that “[n]either free available chlorine nor total residual oxidants may be discharged for more than two hours **in any one *calendar* day.**” (emphasis added).

Comment # II.B.10

Commenter: 12

“Paragraph 7. a. This paragraph sets a desirably strict performance standard. However, because of minimal sampling requirements elsewhere in this draft permit, violations of this standard may not be detected promptly when they occur. In a worst case, they may only be detected after they have harmed the river’s coldwater fishery resources. Page 10 of 15: Paragraph 7. c. The preceding comment on paragraph 7. a. applies to this paragraph as well.”

Comment # II.B.11

Commenter: 13

“Now this section in (e) [126 priority pollutants] is completely unenforceable. There is no requirement that any testing ever be done for the majority of what the Clean Water Act and the Water Quality Act requires, which was the elimination of pollutants. This is such some calculations that could be submitted by an engineer or I guess anyone else. It doesn't specify who should submit those calculations or what the requirements are. And, therefore, the entire guts of the Clean Water Act are eviscerated in this one section, right there.

If you also go to Page 10 in this draft, there are some more paragraphs in there, and that's Section (7)(c), which says that the effluent shall not contain a lot of things, but there's no monitoring required. It says they cannot discharge any hazardous or toxic materials, but there's absolutely no standards listed there. There's no monitoring. It's completely unenforceable.

If you look at, again, Section (d), it says that the water has to be adequately treated to ensure that there's no impact, but there's no specification of what that means, that term, adequately treated means. It's so vague that there's no possibility of enforcement of the section.

If you look at Section (e), it says that the thermal pool shall not do this, shall not do that, but there's no monitoring required for that. There's no specificity in this. It just says that it's going to have minimal impact. What does that mean? What does minimal impact mean? It's not defined. There's no specificity, it's so vague, it completely unenforceable.

Look at (f) under the same section, Section (7)(f), it says that the temperature changes shall be gradual. What does that mean, gradual? There's no definition for that. And it says that large day-to-day fluctuations shall be avoided. Well, how hard does it have to be avoided? What's the point of avoiding something? This is so vague, the wording in this draft document is so vague, that it is completely unenforceable, unmoniterable and it, again, it could have been written by the applicant. I'm not sure, I don't mean any disrespect to you, to you folks, but I'm very familiar with how this process works. This is a pollution -- this is a permit to pollution, and the terminology in here and the specificity is so incredibly vague that it is unenforceable, unmoniterable and it is, I think, an almost worthless document.

I'm sure people put a lot of time into it. I'm sure this -- on Page 3, this is probably a boilerplate kind of language that goes in that says: The applicant can forego doing any testing at all, if an engineer signs off on it and says that they're doing some calculations on the back of a napkin, and that's fine; but, you know, we're talking about a real river here, we're talking about altering the

microbial ecology of a stream, we're talking about a lot of documented effects that come from oil or blow-down, wastewater; and, yes, this document does not address any of those known facts.”

Comment # II.B.12	Commenter: 13
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“6. Sections 7. c., d., e., and f. (page 10) are so full of vague and meaningless wording that they are unenforceable. These sections lack all specificity and detail, fail to provide for appropriate monitoring schemes, lack suitable standards, and are full of words that are not defined, making enforcement impossible. Phrases like “shall not contain metals and/or materials”, “shall be adequately treated to insure”, “shall be gradual”, and “shall be avoided” are so vague and subject to interpretation that they render these sections without any discernable meaning or value. Actual parameters must be specified and detailed limits must be quantified so that required monitoring will be unequivocally capable of determining if limits are being exceeded. A written the, the Water Quality Requirements section contains so many loopholes that it completely guts the NPDES requirements. The same comments apply to sections 8 and 9 (pages 10 & 11).”

Comment # II.B.13	Commenter: 06
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“Remove Unnecessary Language from Permit. As pointed out by Glen Ayers at the August 13 meeting, the permit includes nice sounding language that doesn’t do anything or have any teeth (including but not limited to sections 1e and 7d through f). All fluff should be removed.”

Response # II.B.10-13	Commenter’s: 06, 12 and 13
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The narrative requirements in Part I.A.7 of the RB Permit are as follows:

7. Water Quality Requirements

- a. Discharges shall not either cause a violation of the water quality standards or interfere with the attainment of 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 ensure 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 ensure 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.

These narrative requirements track key provisions of the Massachusetts Water Quality Standards. *See* 314 CMR 4.05 generally and 4.05(3)(b) specifically. These provisions also set environmental requirements that “backstop” the numeric discharge limitations.

The narrative provisions were created, together with the monitoring requirements, to ensure adequate environmental protection in the face of unavoidable uncertainty regarding the future environmental effects of the discharges and cooling water withdrawals by Russell Biomass. It has been shown in some instances that even though discharge monitoring reports indicate that the Permittee has largely complied with the **numeric** discharge standards in the permit, other data may indicate that the Permittee has not complied with the narrative “backstop” provisions of the permit. *See* Responses to Comments for Brayton Point Station, October 3, 2003, Section VII.A.13, page VII-7. Furthermore, it is not always feasible to ‘translate’ precisely the narrative State Water Quality Standards into numeric effluent limits. Rather, it is appropriate to prohibit in the permit exactly the kind of discharges that are prohibited by the water quality standard, (ex., those causing harmful deposits, float as foam, debris, scum, visible oil sheen or other visible pollutants; produce odor, color, taste, or turbidity in the receiving water; metals and/or materials in concentrations or in combinations which are hazardous or toxic to aquatic life; thermal plumes that block zones of fish passage, interfere with the spawning, development/growth, residence, feeding and/or other natural behaviors of indigenous populations; etc.). Prohibiting these discharges is not vague or meaningless as narrative requirements are equally as enforceable as numeric requirements.² In any event, in its Certification letter issued pursuant to CWA 401, the State specifies that these conditions must be included in the permit. Thus the EPA is legally required to include these conditions. EPA regulations also dictate that permits shall contain any conditions necessary to achieve water quality standards, including narrative criteria for water quality. 40 C.F.R. § 122.44(d)(1).

If new information becomes available in the future, which indicates that new or more stringent permit limits are needed to meet water quality standards, the permit may be modified accordingly.

Moreover, many of the narrative provisions in Part I.A.7.a-c of the Permit can also be confirmed with Whole Effluent Toxicity (WET) testing, which is also required by the Final Permit. WET testing subjects aquatic species to the discharge water and observes the short and long-term effects. Therefore, this monitoring should detect the overall toxic effects of pollutants in the discharge on the aquatic environment. This requirement assures the discharge as a whole is not negatively impacting

² Enforceable criteria in State water quality standards may be expressed either in numeric or “broad, narrative” form. *See* PUD No. 1 of Jefferson County v. Washington Department of Ecology, 511 U.S. at 715-18 (1994). In other words, narrative permit conditions are equally as enforceable as numerical permit limitations.

the naturally occurring biological organisms in the receiving waterway. Further, 40 CFR 122.44(d) requires that where EPA determines, using site-specific WET data, that a discharge causes, has reasonable potential to cause, or contributes to an excursion above the WQS, the permitting authority must establish effluent limits for WET.

Part I.A.8 of the Draft Permit contains specific requirements pertaining to the facility's cooling water intake structure. These requirements include, among others, a 750 gpm maximum cooling water withdrawal limit, a maximum 1-inch bar spacing prerequisite at the trash rack, a 9.5 mm maximum screen mesh size, and a ≤ 0.5 fps through-screen velocity provision. Part I.A.9 of the Draft Permit contains the specific terms of a required thermal plume characterization study to be performed in-stream during expected peak rise in temperature due to plant operations (early fall). EPA does not believe that these sections contain requirements that are vague, meaningless, lack specificity or detail, contain loopholes, or are unenforceable.

Regarding the priority pollutant requirements, as explained in the Fact Sheet, "the proposed Russell Biomass facility does not fall within the Steam Electric Power Generating Point Source Category only because it relies on biomass for its fuel source rather than a fossil or nuclear fuel. Nevertheless, EPA concludes that it is reasonable and appropriate to consider the ELGs for the Steam Electric Power Generating Point Source Category (the Steam Electric ELGs) in developing BPJ-based BAT limits for the Russell Biomass facility given that it meets the other criteria for classification under this industrial category. *See* 40 C.F.R. § 423.10.³" EPA considered both the BAT and NSPS included in the Steam Electric ELGs, although the proposed Russell Biomass facility is not a "new source" under the CWA. EPA concluded on a best professional judgment basis that the BAT and NSPS priority pollutant limits from the ELGs are appropriate to apply to the Russell Biomass facility. *See* 40 C.F.R. §§ 423.14(d)(1) and 423.15(j)(1) (for cooling tower blowdown). The Fact Sheet at page 19 also explains that:

"[t]he 126 priority pollutants include contaminants potentially contained in chemicals added for cooling tower maintenance. *See id.* and 40 C.F.R. Part 423 Appendix A. However, since Russell Biomass also adds boiler blowdown waste to the cooling tower, the Draft Permit limits also apply to chemicals used in the boiler. No detectable amount of priority pollutants are allowed in the discharge. These technology based limits are more stringent than calculated water quality limits and therefore govern the permit...[and] [b]oth the BAT and the NSPS standards in the Steam Electric ELGs state that:

At the permitting authority's discretion, instead of the monitoring in 40 CFR 122.11(b), compliance with the limitations for the 126 priority pollutants in paragraph[s] (d)(1) and] (j)(1) of . . . [§§ 423.13 and 423.15, respectively], may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

³ The Steam Electric Power Generating Point Source Category includes facilities whose discharges result "from the operation of a generating unit by an establishment primarily engaged in the generation of electricity for distribution and sale which results primarily from a process utilizing fossil-type fuel (coal, oil, or gas) or nuclear fuel in conjunction with a thermal cycle employing the steam water system as the thermodynamic medium." 40 C.F.R. § 423.10.

40 C.F.R. §§ 423.13(d)(3) and 423.15(j)(3). ”

Generally, EPA does not rely only on engineering calculations but is informed by the annual testing results; experience from other similar facilities; chemical material safety data sheets (MSDSs); and other information supplied by permittees and/or chemical vendors. Furthermore, as required in Part I.A.1.e of the Permit, Russell Biomass is required to sample for all 126 priority pollutants (PP's) each year until EPA formally approves in writing any reduction in sampling.

Priority pollutant sampling is performed to assure the discharge does not contain pollutants that exceed the water quality standards established for the Westfield River. EPA must ensure that the discharge has no reasonable potential to exceed water quality standards (WQS). Therefore, the permit requires annual PP monitoring. If the data shows a reasonable potential exists to exceed WQS, the permit may be modified, in accordance with the Clean Water Act regulations found at 40 C.F.R. § 122.62, to include limits for these PP's.

For circumstances involving significant violations, Part II of the Final Permit, General Conditions Part II.D.1.e(1), currently requires Russell Biomass to notify EPA and MassDEP of “any noncompliance which may endanger health or the environment...within 24 hours from the time the permittee becomes aware of the circumstances...”

Comment # II.B.14	Commenter: 03
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“Slide 24– EPA Chief Lisa Jackson has called for enforcement of the CWA: citizens are our best allies in cleaning up rivers.”

Response # II.B.14	Commenter: 03
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EPA Region 1 agrees. *See* RTC II.B.1 above.

C. Permittee Self-Monitoring

Comment # II.C.1	Commenter: 09
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“And the other is, I really am concerned, do not -- I think I heard you say earlier that they would be responsible for their own testing and submitting this information? No way. Please, please --- make sure that there is a neutral outside company monitoring it. I worked in the industry. I worked for a milk company for several years. People got paid by what they were selling, the milk. And I can remember fighting in our lab, microbiologist labs, we would fight with the owners, because they wanted to manipulate the testing to pass product through, some with bacteria counts, some with antibiotics in it, and for the public to receive it, because if not, it was a loss to everyone. And we fought them, because, you know what, the public hired me to protect them to clear your milk products, make sure it was safe for you, and yet the owners would fight with us, oh, it's close enough, put it through. No way. No way. I have to live with myself.”

Comment # II.C.2	Commenter: 14
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“... Monitoring. I know people have talked about that. I drive over the bridge and I look at the erosion behind the old Westfield River Paper Company. I look at the trees toppling down and I think, geez, I look at this all the time. All of us look at the erosion on that mountainside. If Mr. Hull is

allowing that mountainside to erode, what is he going to discharge into our river? I mean, how can we trust someone that's allowing this erosion, and it's been like that for I don't know how long, right in front of our eyes. How can we trust him to do what he says he's going to do, unless you very strictly monitor this plant?"

Comment # II.C.3

Commenter: 17

"We are the Springfield Area Sustainable Energy Association is an advocacy group, and we are always trying to inform the public about sustainable practices, alternative means of heating their homes and so on and so forth in the valley. Our membership goes up and down the Pioneer Valley. We are especially concerned about this permit and the fact that there is no direct monitoring by EPA or the MassDEP, and relying on the operators of the plant, the permittee, to do the monitoring and the testing, and we call in to question the integrity of the reporting that's going to be taking place."

Comment # II.C.4

Commenter: 26

"Two things already alarm us about the permit and must be changed. First, the applicant for the permit can not be trusted to police themselves as stipulated in the current draft of the permit. That's like putting the fox in charge of the hen house. The permit must provide for more accountability and oversight in the form of a paid river steward working in conjunction with the City of Westfield, the Westfield River Watershed Association, Westfield State College and the Connecticut River Watershed Council. Perhaps other environmental and river protection organizations could also offer oversight and guidance. Second, the permit must provide for more frequent testing of the river. Annual testing is insufficient. At least quarterly testing must be conducted to ensure that the river water is not unsafe. Even more frequent testing would be advisable under adverse conditions."

Comment # II.C.5

Commenter: 13

"4. All testing and monitoring must be done by an independent 3rd party. Self-regulation and self-monitoring is not acceptable. All testing must be in compliance with 40CFR136."

Comment # II.C.6

Commenter: 13

"Throughout this Draft Authorization, the applicant appears to be given all responsibility to monitor itself. All references to monitoring, sampling, testing, and reporting by the permittee must be changed to specify that all of the above requirements must be done by an independent 3rd party professional. This applicant has no credibility in the community and can not be trusted to voluntarily monitor itself."

Comment # II.C.7

Commenter: 06

"River Steward. An independent river steward is needed to guard the river against abuse by this project, regardless of the specifics of permit conditions. The river steward should conduct all required sampling and coordination with certified laboratories. The project proponents cannot be relied upon to police themselves. All one needs to do is take a quick glance at their proposed incinerator location and see the erosion problem they have created there to know that river protection is not a priority for them. Similarly, the town cannot be relied upon to police the incinerator, as evidenced by the erosion problem that has gone unrectified."

Comment # II.C.8

Commenter: 03

“Slide 23– If a final permit is granted, should require a river steward and stipulated penalties, so that we don’t have to play penpals, and there is no reason the monitoring data cannot be provided to citizens in real time.” “so that we don't have to FOIA requests to EPA to find out what's going on after the fact.”

Response# II.C.1-8

Commenter’s: 3, 6, 9, 13, 14, 17 and 26

Standard NPDES EPA monitoring requirements are provided in Part II.C.1.d of the permit. They state: “Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136 ... unless other test procedures have been specified in the permit.” Neither the federal NPDES permit nor federal regulations limit test procedures only to those offered for state certification in Massachusetts. Therefore, NPDES permit holders including Russell Biomass are allowed to collect their own samples and in some cases perform the analyses, but the monitoring and testing must be conducted in accordance with the test procedures approved under 40 CFR Part 136. See 40 CFR §§122.41(j)(4) and 122.44(i). Sampling data from permittee’s and/or independent laboratories are recorded on Discharge Monitoring Reports (DMRs), which must be submitted by the 15th of the month following the sampling event. EPA and MassDEP review the data, audit the labs, and perform random inspections, during which they can take their own samples rather than only relying on the permittee’s samples. Data falsification is punishable by enforcement actions, including criminal prosecution. As stated in Part II of the Permit, General Conditions Part C.1.e, “[t]he [CWA] provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more that \$10,000, or by imprisonment for not more than 2 years, or both...”

The U.S. Environmental Protection Agency NPDES Permit Writers’ Manual (EPA-833-K-10-001), published September 2010, provides the following information:

“Regulations requiring the establishment of monitoring and reporting conditions in NPDES permits are at Title 40 of the *Code of Federal Regulations* (CFR) 122.44(i) and 122.48. Regulations at § 122.44(i) require permittees to monitor pollutant mass (or other applicable unit of measure) and effluent volume and to provide other measurements (as appropriate) using the test methods established at Part 136. That subpart also establishes that NPDES permits (with certain specific exceptions as discussed in section 8.1.3 below) must require permittees to monitor for all limited pollutants and report data at least once per year. Regulations at § 122.48 stipulate that all permits must specify requirements concerning the proper use, maintenance, and installation of monitoring equipment or methods (including biological monitoring methods when appropriate). NPDES permits must also specify the monitoring type, intervals, and frequency sufficient to yield data that are representative of the activity” (*Id* at 8-2);

“Continuous monitoring is another option for a limited number of parameters... The reliability, accuracy, and cost of continuous monitoring vary with the parameter monitored. The permit writer should consider the environmental significance of the variation of any of these parameters in the effluent and the cost of continuous monitoring before establishing continuous monitoring requirements in the permit” (*Id* at 8-9); and “[a]ccording to § 122.41(j), monitoring records must be representative of the discharge.” (*Id* at 8-14)

In other words, continuous monitoring is usually only an appropriate requirement for the dischargers that have highly variable effluent and/or large flows. Based on the review of the proposed processes and waste treatment, the Russell Biomass cooling tower blowdown is likely to be homogenous and consistent on a daily basis.

Unfortunately, EPA is not yet equipped to provide real time data over the internet. However, EPA's Enforcement and Compliance History Online (ECHO) at <http://www.epa-echo.gov/echo/> provides information that will help the public find out the compliance status of local facilities. Also, there exists no legal precedent where a NPDES permit can require a company to fund a river steward. Further, *see* RTC II.C.9 below for EPA's reply to concerns regarding monitoring frequencies.

Comment # II.C.9	Commenter: 12
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"Overall, the draft permit takes a trusting, laissez-faire approach to this project. It calls for minimal, infrequent periodic testing to assure effluent emission standards are being met. Infrequent monitoring makes it unlikely that incidents of noncompliance will be found, especially when the Permittee is in charge of scheduling both the tests and the effluent discharges. Should effluent standards be exceeded, the Permittee need only provide "written explanations of all violations" in its cover letter accompanying its monthly Discharge Monitoring Report (DMR)."

Response # II.C.9	Commenter: 12
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EPA disagrees that the testing required by the Russell Biomass permit is minimal or infrequent. Monitoring frequency is determined on a case-by-case basis. According to the NPDES Permit Writers' Manual, the intent is to establish a frequency of monitoring that will detect most events of noncompliance without requiring needless or burdensome monitoring (page 8-5). In establishing monitoring frequency, the permit writer estimates the variability of the concentration of the parameter by reviewing effluent data for the facility, or in the absence of such data, by reviewing data from similar dischargers. The monitoring frequencies required in the Russell Biomass permit were chosen to obtain enough data to develop a characterization of each outfall.

D. Insufficient Data

Comment # II.D.1	Commenter: 06
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"Discharging heated water into the river is totally unacceptable for the reasons Piotr and Rob Moir outlined, especially in the absence of good data on what the flows are and how much water there is to dilute that water. The lack of science here is really appalling. And, again, the lack of science is in order to save Russell Biomass the expense of getting the facts that are needed to support its case."

Comment # II.D.2	Commenter: 02
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"I had the opportunity to review the data that that was held and provided, and I give you just two examples, not everything, and those examples have been submitted in my earlier testimony, what I think is a particular problem. For example, that data that has been used to determination of the terminal flume that will be coming out of the output, so the terminal -- so the hot water that will be coming out of the facility is creating a terminal flume and this flume has been determined, based on a model that tells us how much water will be and how much more hot water we are putting in. The model that has been applied here is completely inadequate. It's very simplistic and I wouldn't base my decision on this sort of model. The same situation is with measurement of pollutants at the

location. I have seen analysis that has been done only sporadically and at the time of the year where we do not expect very low flows.”

Comment # II.D.3

Commenter: 02

“... So I'm, again, recommending that you will not apply standards to this in this permit process, industry-based standards, but that you will prepare a very detailed site-specific study that will give us full certainty that we will not destroy this wonderful river and it will have zero impact on that fauna and endangered fauna in this river. So this is my very thought-over recommendation and I also recommend that that effective climate change will be incorporated. The science is there, and I tell you this, I know the science is there. We can fly satellites on Mars, we must be able to predict what will happen to our river. We have super computers that can do it. And that's what I highly recommend that more will be invested, because this is one of our best rivers, and we are – this project is receiving dollars from taxpayers for environmental improvements, it would be a shame if this project would have even very little impact on our environment.”

Comment # II.D.4

Commenter: 02

“So one more time, I would like to underscore that great diligence is necessary; and, therefore, I would also recommend as a scientist, that preparing this investigation and preparing this permit, you will take into account the current status of the river itself, because seeing just today that the five sampling points do not include conditions in the river, and that's a major concern, because everybody will understand it makes a huge difference if you add pollutants or keep a lot of water that is not polluted or if you add pollutants to very little water that is already polluted, this might bring our fauna right to the point that they will die. And we have, right at this spot, we do not have only Russell Biomass, we have wastewater treatment plant that is having a discharge; we have proposed Indian Hydro, where the permit conditions are still unspecific enough, so how can we predict the future without taking this facility to that exactly in the same location into account? I would highly recommend that this will be incorporated into analysis and the study.”

Comment # II.D.5

Commenter: 30

“... while EPA has clearly carefully considered many issues when issuing this permit, there are still outstanding questions. Many of these could be answered prior to the plant's construction with a small amount of water quality and flow monitoring.”

Comment # II.D.6

Commenter: 02

“Furthermore, I would like to express my appreciation to the agency and the courage that they have to make a decision on such a poor database. I believe that the data that is provided here is insufficient for an excellent and perfect due diligence decision. We need more information about what is going on.”

Comment # II.D.7

Commenter: 28

“I would like to suggest that permitting the Russell Biomass plant without a detailed, site-specific analysis of the water levels, evaporation effects, and the ash produced would be criminal and negligent on your part.”

Response# II.D.1-7	Commenter's: 02, 06, 28, and 30
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These commenters are concerned, among other things, that there is insufficient data to proceed with permit issuance. In response to what EPA takes to be the main concern of these comments, the Agency points out that it has independently and objectively assessed the information pertinent to the development of this permit. This is sound regulatory practice and is necessary to properly carry out the Agency's legal responsibilities. That being said, time, budget, data constraints, the limits of data availability, as well as the basic permit application and development process often require EPA to rely on information provided by the permittee. The Agency has tried, however, to make reasonable judgments on such matters and to explain its analyses so that the sources of information it relies on are identified. Finally, the fact that there are penalties applicable to the provision of false information to the government should provide a disincentive for a permittee to engage in such tactics. Beyond all this, however, EPA strives to work as cooperatively as possible with regulated entities and, in this case, has engaged in a great deal of cooperative effort and information sharing with the permittee, as well as with other Federal agencies, the State, and the interested public. For comments specifically on the modeling and assessment of the thermal plume, *see* RTC's II.D.9 and V.D.1-2.

Comment # II.D.8	Commenter: 31
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"Additionally, we are surprised that the permit has been drafted with effluent limits before the type of boiler system has been selected and all chemicals to be used are known. It would be nice if the public could be involved in reviewing the permit again once these important details have been established."

Response # II.D.8	Commenter: 31
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EPA considered the information regarding the two types of boilers that are being considered by the Russell Biomass developers, as well as the unspecified laboratory chemical inventory. As EPA stated in the Fact Sheet, the choice of boiler (either stoker or bubbling fluidized bed) will not significantly affect the water withdrawals and wastewater discharges from the facility. Specifically, "[b]ottom ash management will depend on the type of boiler selected. The Bubbling Fluidized Bed (BFB) type boiler will produce a small amount of solid material called "clinkers" or "slag" that will be collected for disposal. The Stoker type boiler withdraws bottom ash using a water quench and chain conveyor to a storage bin or hopper." *See* Fact Sheet, page 10-11. Also, under the description of Outfall 002 in the Fact Sheet, EPA indicates that "... , if a Stoker type boiler is chosen, the water troughs used to collect and transport bottom ash may need to be drained for periodic maintenance as needed. In this case, the ash-containing effluent will be treated through the oil/water separator and neutralization system prior to discharge." The Draft (and Final) Permit addresses this potential in Part I.A.2.d, as follows: "If a Stoker type boiler is installed at the facility, the Permittee is authorized, during periodic maintenance, to discharge the water drained from the troughs used to collect and transport bottom ash. Quarterly sampling shall include this waste stream."

In addition, the Fact Sheet at page 13 describes that "[l]aboratory wastewater will consist of the facility streams being tested and reagents used to perform the tests that are typical for maintaining operations at a power facility. Which tests will be done on and off-site will be decided by plant operators as the facility is being built. The Draft Permit includes a requirement to submit the names and uses of laboratory substances prior to their discharge from this outfall location." Furthermore, Part I.A.2.b of the permit requires that "[n]o 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.” Considering that the Fact Sheet and Permit reflect the details of which boiler is chosen and the laboratory substances that may be used, EPA sees no need to re-draft the permit for additional review.

Comment # II.D.9	Commenter: 03
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“Slide 22– Better Data is needed before the plant is built: thermal and flow monitoring – there is no reason this was not done before the plant was built. Makes no sense to do it after the fact.”

Response # II.D.9	Commenter: 03
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EPA carefully considered all the materials available pertaining to the proposed Russell Biomass facility and believes that the restrictions and limitations required by the Final Permit ensure that the water quality of the Westfield River will be preserved. The maximum withdrawal allowed is less than 0.2% of mean annual flow and approximately 7% of the 7Q10 low flow. The discharge represents less than 1% of the 7Q10 flow, and less than 2% of the lowest recorded upstream flow (13.2 cfs in September, 1953). Based on the high available dilution and rapid mixing of the river, EPA has determined that the thermal plume will be adequately mixed at the point of discharge so as not to increase the ambient temperature more than 0.6°F during worst-case conditions (Attachment B, Case 3). In addition, streamflow has been continuously monitored at three upstream gages since the early 1900s. One or two years of monitoring at the site is not comparable to more than 70 years of recorded streamflow to calculate low flow statistics. For instance, if monitoring from 2006, one of the highest flow years on record, had been used to evaluate the discharge’s potential impacts, the results would not have been indicative of extremely low discharge flows and the permit may not have been stringent enough to adequately protect aquatic life. Nonetheless, EPA is requiring extensive monitoring in the Final Permit to verify that Russell Biomass facility will not have any detrimental affect on the water quality of the Westfield River after it begins operating.

III. Economics

A. General

Comment # III.A.1	Commenter: 32
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“Why would Town of Russell or State allow such a permit, when for years the state & perhaps the town, has spent millions of dollars in order to restore the small river to a more pristine condition.”

Comment # III.A.2	Commenter: 11
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“If the point is to make jobs for local western Massachusetts people in the forestry business, then why not make wood products, such as child's high chairs, tables, book cases, etc? Maybe the federal and state regulators have been bought off by a businessman with deep pockets. But now that we have the Cheney corporatocracy put out of office, and we have a fair and rational federal administration, and given we have had a rather enlightened Massachusetts governor, I just cannot fathom that you regulators would give a permit for this unconscionable business venture.”

Comment # III.A.3	Commenter: 21
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“...as we discuss this permit, we are just discussing saving the proponent money. Everything that's being permitted in this permit is merely to save the proponent money, because the technology is out there, so that these withdrawals and this discharge is absolutely unnecessary.”

Comment # III.A.4	Commenter: 02
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“...and we are spending millions of dollars, state and federal agencies are spending millions of dollars on the recovery of this species [short-nose sturgeon/dwarf wedge mussel], not only protecting them, but we would like to recover them and have them in the future, so I would strongly encourage the agency to take this into account and, also, include studies of this species in today's database.”

Comment # III.A.5	Commenter: 17
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“These are going to be obscene profits that are going to be generated by this plant. There's nothing sustainable about this plant or renewable as far as the independent scientific research that has been conducted by many people here in the valley and across this country.”

Comment # III.A.6	Commenter: 09
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“What about government money in the past to clean up this river” “What about money already spent on the salmon project”

Comment # III.A.7	Commenter: 22
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“I attended your hearing on the water permit for Russell Biomass project. This type of industry is nothing more than corporate welfare.”

Comment # III.A.8	Commenter: 22
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“Money should not be their excuse [for not installing air cooling] because it is OUR (taxpayers). They are being given a free ride on the back of taxpayers with a good chance of ruining our river, air quality, and nice rural community. Please deny this permit.”

Comment # III.A.9

Commenter: 24

"... I'm a resident of the Town of Russell. We live in Russell for obvious reasons. When you were driving through town, you probably saw it's beauty. Coming down Whipinon (phonetic) Hill, it's the first thing you see as you look over, here's the river, winding through the valley. We are willing to make certain sacrifices to we live here. We live here because we don't want to live in the cities. If I wanted to live in an industrial area, I could move back home, right next to a Biomass plant on Cape Cod, in Rochester, Mass. I don't choose to do that. I can't get back here fast enough.

The point is that this plant does not have a benefit to this town at all. They keep talking about the financial benefit. Well, you know what, we have what money cannot buy right here. We have fresh air, we have a beautiful river, we don't have to fight the traffic that we have to fight on Cape Cod or in the cities, in Springfield.

This plant is not here because it's going to be benefitting Russell. We're realistic enough to know the two developers did not wake up one morning and say to each other, what can we do nice for the Town of Russell?

They saw the opportunity to sneak into a sleepy little town that they thought was a bunch of hicks who didn't see what they were up to. And the door was open for them, so you can't blame them for thinking, ooh, these people don't know what's happening. But we chose to take our time and this -- if you knew the time and effort, the money that we have had to take out of own pockets to fight this.

(The only fuel source that we have to worry about is greed. This whole project is fueled by greed, not ---

It's not about cheap energy, because they've already quoted our municipal light company 14 cents a kilowatt hour. We're paying 7 now, which translates to the consumer, 12 to 13 cents a kilowatt hour. If we bought power from them, it would be 19 to 21 cents a kilowatt hour. And when our manager said to him, hey, we're the lowest company, we need a deal, to see what his reaction would be, after he's sending out printed matter saying that the Town of Russell can save \$100,000 a year on electricity, he looked at our manager -- which we're not going to if it's double, I mean, you don't have to be a mathematical genius to figure that one out. And he turned around and he looked at our manager and he said, I can't give you a deal any more than I can give anybody else, but he's sending propaganda out in the mail, saying that we're going to save money. That's why he's hooked. There are many reasons, but there's on[e] example of why he has no credibility with us. Absolutely none.

And when he first proposed this project, of course, it was going to be cheap electricity for Western Mass. You know what? Chicopee turned him down, South Hadley turned him down, Westfield turned him down, Windsor turned him down, Chester turned him down. Northeast utilities won't have anything to do with them. They're not going to buy that kind of power and pay federal and diesel taxes, they're not going to pay.

So we asked him, where are you going to sell your power? Oh, Peabody is looking at it and Littleton. Well, that's not Western Mass. So he's not doing Western Mass. any favor. And if this project is approved, we will witness the demise to this town as we know it today.

If we don't know anything else about the project, we'll get the roads, common sense, 240 tractor-trailer trucks a day, 120 round trips, four ash trucks, God knows what else. So if you want to help us save our town, make it worth our while. I mean, we've been fighting [t]his for five years. We need your help."

Response # III.A.1- 9

Commenter's: 02, 09, 11, 17, 21, 22, 24, and 32

EPA understands that there are a considerable number of citizens that are concerned about the Russell Biomass facility and that treasure the environmental restoration efforts and lifestyle available in the area. Several comments raised concerns about the motivations of the Permittee and the suspected high profitability of the proposed project. These issues are not within the scope of this permitting action. The action taken today involves the permitting of a new facility through the NPDES program, which regulates point source discharges to waters of the United States. The primary regulations developed by EPA to implement and administer the NPDES Program are found in Title 40 of the *Code of Federal Regulations* (CFR) Part 122). The objective of a NPDES permit is to ensure that the quality of receiving water is not compromised by the discharge of effluent from a facility. In this case, EPA determined, after careful and extensive review of applicable regulations and material, that the limitations and conditions required in the Final Permit protect the high water quality of the Westfield River. Furthermore, EPA believes that the issuance of this Permit will not adversely affect ongoing restoration projects, including salmon stocking or have a negative impact on endangered species in the Connecticut River. The Fact Sheet, which accompanied the Draft Permit and can be found on the EPA, Region I website at: http://www.epa.gov/region1/npdes/permits_listing_ma.html, provides a description of the facility; type and quantities of wastes; the basis for the permit conditions; and significant factual, legal and policy questions considered in preparing the Permit. In addition, Section VIII of this Responses to Comments document contains discussions of technology options that were evaluated; Section VII.C.1 includes EPA's response to endangered species concerns (short-nose sturgeon/dwarf wedge mussel); and response III.C.4-5 speaks to the sustainability of biomass power.

B. Tourism and Recreational Fishing

Comment # III.B.1

Commenter: 06

"Another aspect that is not considered here is tourism and the other parts of our economy. Tourism is a big deal in Western Mass. I'm from Eastern Mass., and friends of mine from Eastern Mass. say, oh, you have the best river out there, I go fishing all the time, and I take my family, we go on trips. You know, it's a big part of our economy here and it doesn't seem fair to throw that away for a Biomass plant developer, just so he can make more profits."

Comment # III.B.2

Commenter: 26

"How will the discharge permit affect the recreational use of the river by the multitudes who enjoy riparian activities?"

Comment # III.B.3

Commenter: 33

"The Westfield River is a very old waterway, older than the Colorado River, older than the Rockies. This landscape in Russell is a half billion years old. The Westfield River with its tributaries drains a 497 sq mile watershed before meeting the Connecticut River. The River runs 78 miles. The Westfield provides us with 50 miles of white water canoeing and kayaking, fishing and recreation. Here in Russell wildlife has returned after an absence of centuries. Wild turkey, bobcat, bear, eagles, even a moose wanders through now and then. All of this wildness is conveniently located for millions of people right next to the Boston- Washington urban corridor."

Comment # III.B.4

Commenter: 08

“As far as the fishing pressure on the river, we get about 5,000 people that fish this river a year. That's not 5,000 individual people. That's 5,000 people at different times that fish the river. How do we know that? Because we've done car counts, creel censuses, raffle tickets and put this whole compilation together, so we have proof of all that, how many times. So that's how much it's being used.”

Comment # III.B.5

Commenter: 03

The permitted withdrawal threatens my interest in the river because fishermen may not maintain as much interest in this river if the fish are not healthy, active, and plentiful. Water quality is directly related to the quality of the fishing experience. There are other benefits to the local economy, as fishermen also stop for gas, lodging and food in the vicinity. The absence of a large and active fishing community also contributes to more illegal activity such as dumping and littering and thus a degraded environment surrounding the river.

Comment # III.B.6

Commenter: 03

The Westfield River is one of the top rivers in Massachusetts for wildlife, plants, fisheries, and human enjoyment. Fly-fishing the Westfield River regularly attracts numerous people from neighboring states and brings visitors from countries all over the world.

Comment # III.B.7

Commenter: 03

It is my understanding that the Westfield River is the second best trout fishery in the state after the Deerfield River. I have met people from other states on the river, such as New Hampshire. When someone comes here from New Hampshire – they've got some nice rivers, so if they come here, you know it's good and you know it has a good reputation among fishermen. Anything that damages the river, damages the river's reputation too, making it harder for me to show others the enjoyment of the river for fly fishing.

Response# III.B.1-7

Commenter's: 03, 06, 08, 26, and 33
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EPA agrees that the Westfield River is an important public resource. In this permit, EPA has established permit limits that are protective of water quality and designated uses. These include the protection of aquatic life for use as a cold water fishery. With these protections, this permitting action is not anticipated to lead to any loss in the recreational value of the river due to decreased water quality.

C. Public Subsidies

Comment # III.C.1

Commenter: 11

“I can testify from my knowledge of what's happened here politically in the Connecticut River Valley; that this is a political, commercial boondoggle where even the planning commission, the Pioneer Valley Planning Commission, that I regularly participate in with Katherine Miller in the land use section -- this is out at West Springfield -- they had a clean energy plan that backs these mega, 50-megawatt power plants using wood, wood chips and so forth, in Greenfield, here, and Palmer, Springfield.”

Comment # III.C.2	Commenter: 06
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“I’ve been an environmentalist with about 28 years of experience, and I’ve been studying the proposed Russell Biomass plan for about four years. I don’t know if the value of the plant comes into your thinking as to whether it’s worthy of a permit, but I’d like you to consider that the Russell Biomass plant is in line to receive \$400 million in public subsidies. I think in light of that amount of corporate welfare that Russell Biomass can take care of its own cooling needs without the river, our river --- And as Jana says, the only reason we’re talking about water cooling is to save these people money. I think they’re getting enough money already.”

Comment # III.C.3	Commenter: 06
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“It is important to understand that Russell Biomass is in line to receive over \$437 million in public subsidies, according to their own information submitted to the Massachusetts Department of Environmental Protection (DEP)¹. According to Dr. Steven Kaiser’s analysis of the financial information provided to DEP in the referenced Order to Complete Response, these subsidies account for 41 percent of Russell Biomass’ projected annual profit of \$36 million. Russell Biomass is estimating an annual return on investment (i.e., profit) of 24 percent. That’s every year. \$437 million is enough corporate welfare for one project. Russell Biomass can’t have the river too. They should use some of the vast sums that will be paid directly by tax-payers and ratepayers to pay for their own cooling and not expect the Westfield River to do their cooling for them for free. The permit is sought simply to save Russell Biomass the added expense of dry cooling. Since when do the economic interests of one out-of-state developer trump the economic interests of the local tourism economy that depends on a healthy river with clean water and living fish? Since when do their economic interests trump the public’s investment of millions of dollars and decades of effort to restore salmon to the Westfield River? It is yet one more sign of Russell Biomass’ corporate greed and total disregard for the public and the environment that they would even ask for this additional favor. Enough is enough!”

Response# III.C.1-3	Commenter’s: 06 and 11
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The plant’s level of profitability is not a regulatory factor in setting requirements necessary to comply with the Clean Water Act and State water quality standards. Again, EPA determined that, after careful and extensive review of applicable regulations and material, the limitations and conditions required in the Final Permit should protect the high water quality of the Westfield River and will not jeopardize uses of the river. Regarding the use of wet mechanical draft cooling towers rather than dry cooling, as discussed in the Fact Sheet, Russell Biomass complies with the CWA § 316(b) Phase I Rule for new facilities even though the Rule’s categorical standards do not apply to Russell Biomass because the facility’s proposed maximum design flow is below the Rule’s threshold of greater than 2 million gallons per day (MGD). The Rule specifies, among other things, that a reduction in total design intake flow commensurate with that which can be attained by a closed-cycle, recirculating cooling water system constitutes the best technology available (BTA) for new facilities withdrawing more than 10 MGD. *See* 40 C.F.R. § 125.84(b)(1); 66 Fed. Reg. at 65273.

¹ Letter to Massachusetts Department of Environmental Protection from Tighe & Bond on behalf of Russell Biomass, LLC, re Water Management Act Order to Complete Response Application #P2-1-04-256.04.

Comment # III.C.4

Commenter: 06

“How Does Biomass Get Public Subsidies? By falsely claiming that biomass incineration is carbon neutral and helps solve the climate problem, and thus is deserving of renewable energy credits (RECs, subsidies paid by rate-payers). Carbon neutrality is predicated on the assumption that biomass would be harvested sustainably, i.e., at a rate no greater than the rate at which it grows back. However, this is not what happens with large-scale biomass incinerators such as the four proposed for western Massachusetts.”

Comment # III.C.5

Commenter: 06

“If Biomass Incinerators Make No Sense, Why Are They Being Advocated? Money. Largescale biomass energy is very expensive, it turns out, another major problem with the technology that ultimately traces back to its profound inefficiency. However, biomass developers can do quite well, thanks to subsidies from you and me (if we are gullible enough to pay them). Consider Russell Biomass’ sweet deal. The numbers below were calculated by Stephen Kaiser (June 2009) from data in a May 4, 2007 letter prepared by Tighe & Bond for Russell Biomass to the Massachusetts Department of Environmental Protection. Russell Biomass would make an estimated \$36 million in annual profit, which is an annual 24% return on investment (not too shabby!!!). The average annual public subsidy of Russell Biomass would be \$15 million. Thus, 41% of Russell Biomass’ incredibly generous annual profit would be paid for directly by you and me as a bonus. Citizens pay for biomass in many ways in addition to direct cash payments (e.g., RECs, other subsidies, charges for kilowatt-hours). Citizens also pay by absorbing a wide array of negative health, environmental, and economic impacts. These include negative impacts on air quality (e.g., emissions of nitrous oxides, carbon monoxide, particulate matter, and Hazardous Air Pollutants), water quality, water resources, trees, fish and wildlife, fish and wildlife habitat, wetlands, forest services related to water and air quality, endangered species habitat, odors, noise, and traffic. And let’s not forget depressed property values, damaged tourism economy, increased cordwood prices, diminished value of RECs (making it harder for clean forms of energy like solar to compete), and the economic value of lost forest services.”

Response # III.C.4-5

Commenter: 06

Questions as to whether Biomass is carbon neutral and deserving subsidies are not relevant to setting requirements necessary for the facility to comply with the Clean Water Act and State water quality standards. As described above, the action taken today involves the permitting of a new facility through the NPDES program, which regulates discharges from point sources to waters of the United States. The objective of a NPDES permit is to ensure that the quality of receiving water is not compromised by the discharge of effluent from a facility. In this case, EPA determined that, after careful and extensive review of applicable regulations and material, the limitations and conditions required in the Final Permit will protect the high water quality of the Westfield River. Coincidentally, during the development of this Final Permit, the Massachusetts Department of Energy Resources arranged for a third party study to determine the sustainability and carbon neutrality of biomass power generation as well as the potential impacts on the forests of Massachusetts.

IV. Westfield River

A. General Water Quality

Comment # IV.A.1

Commenter: 29

“In the abstract provided by your department, the quality of rivers, lakes, and bays has improved in the last 25 years. We need to not revert to the days where these waterways could not sustain aquatic life and where their quality was suspect. We must not ignore the progress that has been made by harming the waters. Arguments have been made that there is only a small percentage of a chance that any harm will happen as a result of this withdrawal and return process. I respectfully state that even a 1% chance is too much of a chance to take. Environmental influences on the river are ever-changing and their effects are far-reaching I don’t believe that man-made changes need to contribute to those which we cannot change (from nature). Man-made changes can be stopped/controlled and I believe this is the course which should be taken in this matter by denying this permit application. This river does not need to have more added to its already present challenges from global warming issues.”

Comment # IV.A.2

Commenter: 05

“The river has been in use by industry for quite some time and it is -- and this proposed Biomass plant wants to continue the abusive process by not letting it be cleaned up. And they don't care about the chance to restore it. The plant will transform the river so that it will not support its wildlife. What is very disappointing is the massive documentation that has been accumulating over many years on the other brook of New Hampshire's study that is being completed ignored and it appears that none of the decision makers has ever heard about it.”

Response # IV.A.1-2

Commenter's: 05 and 29

Because the comment does not identify a specific brook in New Hampshire, EPA is unable to respond to the concern. However, two of the objectives of the CWA, known as the “fishable, swimmable goal” include providing for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water, as well as prohibiting the discharge of toxic pollutants in toxic amounts (CWA Section 101(a)). Improvements to the quality of rivers, lakes, and bays in the last few decades can be attributed, in part, to enforcement of the CWA and state water quality standards, and to programs like NPDES, which regulates the discharge of pollutants from point sources to waters of the United States (*See* regulations at 40 CFR Part 122).

Violation of the NPDES permit, including conditions to maintain water quality standards and existing uses at Part I.A.7.a, would be punishable by civil and/or criminal penalty. *See* Part II.A.1 of the Final Permit. In this case, EPA determined that, after extensive review of applicable regulations and material, the effluent limits and narrative requirements in the Final Permit ensure that the high water quality of the Westfield River is protected, existing uses are maintained, and the river will continue to support a diverse aquatic community, including cold water fish populations.

Comment # IV.A.3

Commenter: 07

“I’m from Southbridge, Massachusetts, and a resident of the Connecticut Valley my entire life, and I love the Westfield River and I spent a lot of time here. Also, I love the Connecticut River. It really is disheartening to see this Biomass stuff, the proposed Greenfield plant, the Russell plant and the devastation of what it's going to cause the Connecticut River watershed and throughout the valley.

Also, the Pioneer Valley Energy Center would draw in 2 million gallons of water a day, and then doing that discharge into the Westfield River. I'm not an environmentalist by any means, but at what time do we stop trashing what we drink and what we breathe, and enough is enough. And I agree with Ellen, deny the permit fully."

Response # IV.A.3	Commenter: 07
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EPA believes that the effluent limitations and requirements of the Final Permit will ensure that the water quality and existing uses of the Westfield River are not adversely affected by the operation of the Russell Biomass facility. Other biomass facilities that may be proposed in the Connecticut River watershed will be subject to the same rigorous permitting process as Russell Biomass to ensure that the operation of any facility does not adversely impact the quality or existing uses of the receiving water. The Pioneer Valley Energy Center has proposed to withdraw a maximum of 2 MGD from the Tighe-Carmody Reservoir in Holyoke, MA, and will discharge this volume to the Westfield Water Pollution Control Plant (WPCP), and as such, must meet the effluent requirements of the Westfield WPCP NPDES permit. There will be no direct discharge to the Westfield River (Pioneer Valley FEIR 2009).

Comment # IV.A.4	Commenter: 08
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"Also, we do have a native population of brown trout right in the same area of all the discharge that we're talking about. We do get a lot of older fish out of this area. We get five pounders, six pounders, seven-pound rainbows and browns, through the years. We have it all documented."

Response # IV.A.4	Commenter: 08
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EPA is aware that MassWildlife stocks the Westfield River in Russell with trout, and that an older trout population may be present in the vicinity of the proposed site. MassWildlife's 2009 Target Fish Community Technical Report demonstrated that brook trout and rainbow trout comprise a small percentage of the current fish community. Although this study did not collect any brown trout from the river, anecdotal evidence from area fishermen suggest that brown trout are present and MassWildlife regularly stocks brook, rainbow, brown, and tiger trout from state hatcheries in area rivers.

EPA recognized the presence of coldwater fish species and the segment's designation as a coldwater fishery resource as defined by MassWildlife in the Fact Sheet (p.5-6). In addition, EPA determined, in compliance with state water quality standards at 314 CMR 4.06(1)(d)(7), that a cold water fishery on this segment of the Westfield River should be protected as an existing use due to the presence of cold water species even though the water has not been documented to meet the cold water criteria in 314 CMR 4.00 (Fact Sheet p. 5-6). In order to maintain and protect the existing cold water fishery, EPA considered the temperature requirements of trout and salmon in determining the maximum temperature limits (p. 25-26). The technology-based thermal limit in the Draft and Final Permit is expected to result in a minimal in-stream temperature increase, which is more stringent than the rise in temperature allowed under the water quality standards at 314 CMR 4.05(3)(b)(2) for either cold water (rise of 3°F) or warm water fisheries (rise of 5°F). EPA believes that the effluent limitations and requirements of the Final Permit will ensure that the intake and discharge of water from the facility will not adversely impact the aquatic resources of the Westfield River, including cold water fish populations. See, for example, RTC V.A.6-7, V.C.2-6, and IV.E.1-7.

Comment # IV.A.5

Commenter: 08

"We've gone this road many, many times. In 30 years I've seen everything dumped in this river but who knows what. I just can't see continually going backwards instead of forward in this technology. I don't believe that the fish population is going to really improve by any means. This could be very detrimental, it can be detrimental to the entire area, and detrimental to the fishermen, and it's going to be detrimental to everybody... I just don't see anything pluses and all I see is minus. But I've seen actual results of this."

Response # IV.A.5

Commenter: 08

EPA has demonstrated in the Fact Sheet and in responses to comments herein (for example, RTC V.A.6-7, V.C.2-6, V.D.4 and IV.E.1-7) that the Final Permit will ensure that the water quality and existing uses of the Westfield River, including excellent fish habitat, will be maintained. As such, there should be no detrimental impact to the fish populations of the Westfield River.

Comment # IV.A.6

Commenter: 09

"So, please, please, just take care of us, don't let it happen. You know, some countries don't even have water. Areas in Africa, you're rationed a gallon a day. People remember Georgia, last year, had no water. Wells were dry. Their reservoirs were dry. We don't know what the future holds here. But you know what, if we start headed to a drought, we're only going to end up with concentrated pollution. You're doing studies on what's out there today and we know the environment changes daily, especially with global warming and so forth. So we don't know where this is all going to play out; but, you know, if we keep going the way we're headed, it doesn't look good, and then we'll have a worse mess that you'll even think is going to happen. Please do not give them a permit."

Comment # IV.A.7

Commenter: 02

"Our rivers, we know it as a scientist, are endangered species. The river, not only the species in the river, but the rivers itself. And, specifically, in our climate, in our area, New England, where we have a history of human-based modification and damage and devastation of our rivers, when they are starting to recover, and all of a sudden now we are facing the major change and major shifts in our climate, we are expecting big problems in the future."

Response # IV.A.6-7

Commenter's: 02, 08, and 09

EPA is aware of the perilous status of the Nation's rivers and streams, and has dedicated substantial resources to their protection. EPA used the 7Q10 low flow, which is defined as the lowest 7-day average flow that occurs on average once every ten years, to determine effluent limitations for this facility. Low flow statistics are useful metrics for setting effluent limitations because they approximate available streamflow during those periods when conflicts between streamflow supply and demand are most likely to occur. State water quality standards at 314 CMR 4.03(3)(a) indicate that the 7Q10 flow should be used to approximate the most severe hydrologic condition at which water quality criteria must be applied for rivers and streams. For the Westfield River, upstream gages provide a 70+ year historical record of streamflow that includes major droughts in the 1960's and early 1980's, and low flow years in 2007 and 2010. The Final Permit includes stringent effluent limits calculated using this low flow statistic to ensure that the quality and existing uses of the Westfield River will be maintained under operation of the proposed facility even under severe low flow conditions. See RTC IV.E.1-7.

EPA also recognizes the potential for climate change to impact our natural resources. The permit is scheduled to be re-issued every five years, at which time EPA will conduct a full review of all relevant information, including additional data and new information, and will alter the permit limits, if appropriate, in order to continue to protect the Westfield River.

Comment # IV.A.8	Commenter: 02
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“We, in the part of the country that is proud to have Atlantic salmon, it is proud to have a brook trout, big quantity of cold-water fish that need cold water, we are expecting that they will be disappearing. Now we have just heard one testimony that people who live long enough here see declines in those species; and as scientists, we are trying to recommend to managers, and I would like to highly recommend to the agencies involved in permitting process, that they will take this into account; that we need high-level of diligence permitting this project, and we have to be prepared that unexpected changes might be facing us and we need to take them into account.”

Comment # IV.A.9	Commenter: 02
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“Specifically, about Westfield River, we have learned recently from our state agencies that Westfield River is one of the best rivers in Massachusetts, recently developed target fish community, which is a measure of the quality of wildlife and quality of fisheries, have said that out of eleven rivers that have been investigated, this is the only one that meets this conduct.”

Comment # IV.A.10	Commenter: 16
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“I, myself, live in the City of Westfield and there's going to be a 400-megawatt gas-fired plant, probably about four miles from where I live, and I know over in Ludlow there's another 280-megawatts of power that will be gas-fired, but I do not believe that they should be allowed to abuse the river that has come back from ruination and destruction. I know many people don't believe it, but if you would have saw that river when I, me, John and a lot of the other people, we've seen that water come back to an amazing, amazing quality. In the summertime, on a hot day, people from Springfield, Chicopee, Holyoke, come up to our river, because it's nice, it's beautiful, it's clean, it's cool for them.”

Comment # IV.A.11	Commenter: 03
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“By allowing the power plant to draw water up to the lowest recorded flow value, the DEP has not safe guarded the special habitat of the Westfield River, and will pose a threat to fisheries upstream and downstream of the site, because in river systems, the entire river is connected. As we have seen from numerous examples in history, such as the installation of the Holyoke dam in the 1800's and the resulting crash of the anadromous fish run, negatively impacting fish habitat or an aquatic population at one critical point can affect that population's ability to survive in an entire river system.”

Response # IV.A.8-11	Commenter's: 02, 03 and 16
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MassWildlife's 2009 Target Fish Community Technical Report identified the Westfield River as the only river in the assessment to achieve good fish community status. This study highlights the quality of the habitat and fish populations in the Westfield River. In addition, the Westfield River supports populations of cold water fish as a result of MassWildlife's stocking efforts. EPA is committed to

ensuring that the river will continue to support a diverse biological community, including cold water species, under the operation of the proposed facility.

Under severe low flows and a river temperature of 68°F, calculations demonstrate that the thermal effluent from the facility is expected to increase the ambient river temperature less than 0.3°F (Attachment B, Case 5), which is not expected to adversely impact cold water fish populations. Under worst-case conditions (representative of the maximum temperature difference between the ambient river temperature and effluent temperature), the rise in temperature in the river is expected to be less than 0.6°F (Attachment B, Case 3). The 7Q10 low flow statistic used to approximate severe low flow conditions is based on over 70+ years of historical stream flow data, but EPA also calculated the expected rise in temperature due to the discharge at the lowest recorded flow of 13.2 cfs. In addition, the permit cycle is five years, at which time EPA will conduct a full review of all relevant information, including additional data and new information, and will alter the permit limits, if appropriate, in order to continue to protect the Westfield River. *See* RTC V.A.6-7, V.C.2-7, and IV.E.1-7.

Comment # IV.A.12	Commenter: 16
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“Part I.A.7.a on page 9 of the permit (Water Quality Requirements) includes somewhat vague wording with regard to the requirement to protect existing uses. The draft permit uses the word “jeopardize” which may be interpreted very differently by different individuals. The potential vagueness of this language was also addressed by others at the Public Hearing. The Fact Sheet addresses the need to protect existing uses, especially habitat for cold water species. Suggested alternative language which may help to address this concern is as follows:

“I.A.7.a Discharges shall not cause a violation of designated water quality standards, and shall maintain protection of existing uses as set out in Section 6.3.1 of the Fact Sheet.”

Response # IV.A.12	Commenter: 16
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The Webster-Merriam dictionary defines jeopardize as “to expose to danger or risk.” EPA intends that the discharge shall not risk the attainment of any of the Class B or existing uses of the Westfield River, including, but not limited to, primary and secondary recreation and habitat for cold water fish populations. Nonetheless, the Final Permit at Part I.A.7.a. has been changed to “Discharges shall not either cause a violation of the water quality standards or ~~jeopardize~~ *interfere with the attainment of* 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” to address the comment and be consistent with the language at 314 CMR 4.03(1)(a).

Comment # IV.A.13	Commenter: 33
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“Just below the discharge pipe, the river falls 40 to 50 feet over rocks (in two sluiceways). River water is quickly mixed as it rounds a gravel bend. How will migrating and local fish be impacted by a warm briny mixture discharged from the electric utility? Fish struggle to surmount the Westfield River’s falls. Lessening the oxygen carrying capacity of the water by making it warmer poses a further challenge for fish precisely when strong muscles are most needed. Please do not permit further burdens on this riparian community. Government must regulate developers and industries so that environments are not made worst off than before such enterprises were here.”

Response # IV.A.13

Commenter: 33

EPA is unclear why the commenter would suggest that the discharge, which will contain no salts would be “briny.” As stated on pages 25-27 of the Fact Sheet and elsewhere in this Response to Comments (RTC V.A.6-7, V.C.2-7, and IV.E.1-7), EPA expects that the heated discharge from the facility will not raise the ambient temperature of the Westfield River more than 0.03°F at a maximum in-stream summer temperature and 7Q10 low flow, no more than 0.3°F at a river temperature of 68°F and the lowest recorded flow, and a maximum of 0.6°F at a river temperature of 32°F and effluent temperature of 85°F (Attachment B, Cases 1, 5, and 3). The expected rise in temperature resulting from the effluent at the technology-based temperature limit in the Final Permit is more stringent than would be allowed under the water quality standards at 314 CMR 4.05(3)(b)(2) for either cold water or warm water fisheries.

The effluent does not degrade ambient conditions because even though the discharge temperature is higher than ambient temperatures in the river, the flow represents such a small portion of the overall flow in the river, even at severe low flow conditions (e.g., maximum discharge of 0.206 cfs is 1.1% of 7Q10 flow and 1.5% of lowest recorded flow). The flow of the river even under severe low flow conditions is likely to provide sufficient mixing of the thermal effluent such that there should be no impacts from additional heat, including any impacts to the dissolved oxygen (DO) in the river. A thermal monitoring study is required to confirm that the thermal impacts at the point of discharge during summer low flows are consistent with numeric and narrative state water quality standards for the protection of cold and warm water fish populations, as well as the calculations in this Response to Comments (See Part I.A.9 of the Final Permit). In addition, because DO is important to maintain a healthy biological community, the Final Permit at Part I.A.9.a.iv requires the Permittee to monitor DO during the summer thermal monitoring study.

Comment # IV.A.14

Commenter: 03

“My first slide shows media advertising by the company, Russell Biomass, one of many in past few years: young boys jumping into clean river with lots of water. Company would have you believe the Westfield River is always clean and full of water.

Slide 3 is the Westfield River in October 2007, looking downstream about ½ mile – of the biomass plant site- a photo taken by River Steward Mr. Henry Warchol, who has lived in Westfield his entire life. He has watched the river come full circle. All photos are his. This photo shows a degraded river.

Slides 4 – The River is in precarious state.”

Response # IV.A.14

Commenter: 03

The photo illustrates that at some points during the year the Westfield River experiences low stream flow. According to the upstream USGS gages, the river experienced a low flow event during the first week of October 2007 (at the time the picture was taken), but flows were still greater than the 7Q10 low flow used to approximate severe low flow conditions for calculation of effluent limitations in the permit. The occurrence of low stream flow is not indicative of a degraded river, as all streams naturally experience periods of high and low flow. The Merriam-Webster Dictionary defines degrade as “to lower to an inferior or less effective level.” In fact, the Westfield River ranks as one of the best rivers in the state in terms of target fish community and plays a major role in the Atlantic salmon restoration effort (MassWildlife 2009 Target Fish Community Technical Report). According to the USGS, when considering the potential alteration of streamflow by surface and groundwater

withdrawals, the Westfield River watershed generally exhibits near-natural streamflow conditions (Indicators of Streamflow Alteration, Habitat Fragmentation, Impervious Cover, and Water Quality for Massachusetts Stream Basins; Scientific Investigations Report 2009-5272). The water quality and biological resources of the Westfield River do not suggest it is degraded, as the commenter suggests, but rather that the River may experience natural low stream flow events, one of which occurred in October 2007.

Comment # IV.A.15

Commenter: 03

“Slide 9 – 2008 [or possibly “2009” as recorded during testimony at the public hearing] the Westfield watershed had a cyanobacteria warning – do not wade swim or boat, this bacteria is toxic to humans; this sign is just upstream of the Russell biomass site at Littleville reservoir.”

Response # IV.A.15

Commenter: 03

This sign was posted at Littleville Lake by the Army Corps of Engineers (ACOE) due to a cyanobacterial bloom present between September and November of 2007. According to the ACOE, the occurrence of algal blooms at both the Littleville and Knightville projects is rare. Heavy spring rainfalls, coupled with warm weather and low summer flows may have facilitated the growth of algae blooms during 2007. These weather patterns contributed to algal blooms at many ACOE projects where blooms are typically rare (ACOE 2008 – Fiscal Year 2007 Annual Water Quality Report). No blooms were reported in 2008 (ACOE 2009 - Fiscal Year 2008 WQ Report). A Fiscal Year 2009 Report is not available, but the ACOE is not aware of any cyanobacteria blooms in the past two years (email correspondence with T. Barker, March 30, 2011).

The occurrence of a single cyanobacteria bloom in the Littleville Lake during 2007 is not indicative of chronic water quality problems. In fact, neither Littleville nor Knightville Lake has a history of algal blooms and both are listed as Class I projects by the ACOE, defined as having “no significant water quality problems.” In addition, neither lake is listed on the Massachusetts List of Impaired Waters (303(d) list).

Comment # IV.A.16

Commenter #: 03

“The best swimming hole is located at Strathmore Park in Russell just downstream from the site of the Russell Biomass site. My concerns are that the effluent discharge from the Biomass Plant will impair the current crystal clear condition of the water and be a possible threat to my health.”

Comment # IV.A.17

Commenter: 03

“I have always been concerned about the possibility of swimming in contaminated water, no matter how miniscule. I have always wondered if the current dilution factor of the discharge from the two sewage treatment plants has been of a safe enough level at the river’s current summer flows. My concerns going forward will be if future withdrawals of river water by Russell Biomass will further decrease the dilution factor from the 2 sewage treatment plants. Plus will the warmer water and effluent discharge from the Biomass Plant threaten the water quality and flow and negatively affect my enjoyment of the river.”

Response # IV.A.16-17

Commenter: 03

The Final Permit contains effluent limitations and narrative requirements designed to ensure that the water quality and designated uses of the river, including primary contact recreation (i.e., swimming) will be maintained. No adverse impacts are expected to result from the discharge even under severe low flow conditions (based on 7Q10 flow). Furthermore, EPA does not expect the proposed discharge to cause an increase in ambient water temperatures that would result in any lowering of water quality or impairment of designated uses that would affect the public's enjoyment of the resource (*See* RTC V.A.6-7, V.C.2-7, and IV.E.1-7).

In addition, future withdrawals from RB are not likely to impact available dilution for upstream or downstream wastewater treatment plants and will not affect effluent limitations in the current permits. The dilution factor for the Woronoco WWTP is 774 (Woronoco WWTP Fact Sheet Attachment C). The dilution factor based on a conservative 7Q10 flow adjusted for the loss as a result of RB's withdrawal (19.4 cfs) is 633. This change in dilution is minimal compared to the overall large dilution volume. Similarly, the available dilution at the Russell WWTP adjusted for RB's withdrawal decreases from 62 to 53. Furthermore, the current permits contain technology-based effluent limitations for total suspended solids and biochemical oxygen demand, and pH and bacteria limitations based on water quality standards at the end of pipe, neither of which allow for dilution. Available dilution in both permits is only considered in the whole effluent toxicity requirement for acute toxicity testing, neither of which would change as a result of the slightly lower dilution afforded after considering the potential withdrawal at the proposed Russell Biomass facility. According to the Westfield WPCP Fact Sheet, the dilution factor (5.0), is based on a dye study and is more stringent than a dilution factor calculated from the 7Q10 flow (7.0). Considering that the proposed withdrawal from Russell Biomass comprises a small percentage (4%) of the estimated 7Q10 flow at the Westfield USGS gage (MA0118350) near the Westfield WPCP (see calculation at Attachment A), and that the dilution factor used to calculate the effluent limitations for the Westfield WPCP permit is already more stringent than that based on 7Q10 flow, the proposed withdrawal would not likely affect the effluent limitations in the Westfield WPCP permit. However, when the NPDES permits for these and other facilities potentially affected by the withdrawal at the proposed Russell Biomass facility are renewed, EPA will calculate effluent limitations based on the available dilution with consideration of this proposed withdrawal.

Comment # IV.A.18

Commenter: 03

"In the Westfield River I have seen and documented instances of low flow contributing to algae blooms, further water withdrawal at low flow conditions will exacerbate it."

Response # IV.A.18

Commenter: 03

Algae blooms often occur when environmental conditions (e.g., light, temperature, nutrient availability) are optimal for growth and can be linked to nutrient enrichment and/or extreme weather such as hurricanes, floods, or droughts (NOAA <http://oceanservice.noaa.gov/topics/coasts/hab/>). The withdrawals at RB comprise approximately 7% of the 7Q10 flow (see calculation at Attachment A) and, as a result, are not expected to contribute to conditions that would exacerbate algal growth. EPA concurs with MassDEP's WMA permit that the withdrawal is of a low magnitude and is not expected to cause detrimental impact to the water dependent resources of the Westfield River.

B. Low Water Flow

Comment # IV.B.1

Commenter: 29

“I have lived near this river for my entire life, as well as an adjacent to a brook which empties into the river (across from the proposed plant) and I can attest to the fact that the nature of this river and this brook have significantly changed throughout the years. The water levels have dropped dramatically over time. In the brook there are rock ledges that were never visible years ago, which are now never covered by water; and while other factors may have contributed to the levels the reality is that largely it has changed without man-made contributions. It has stemmed from nature primarily.”

Response # IV.B.1

Commenter: 29

Flow records from the gaged upstream segments of the Westfield River do not suggest that water levels have decreased over time. EPA used The Nature Conservancy’s “Indicators of Hydrologic Alterations” to compare stream flow characteristics in the unregulated West Branch Westfield River between 1960 to 1984 and 1985 to 2009¹. Median annual flows increased post-1985 compared to pre-1985. Median and minimum April and May flows decreased post-1985, but median flows increased in summer, fall, and winter months. Although maximum flows decreased, both large and small flood peak stream flows increased. USGS flow records from 1960 to 2009 do not suggest that stream flow has decreased over time. In the Response to Comments for the Water Management Act Permit, MassDEP also statistically compared stream flow records in the West Branch of the Westfield River between 1969 to 1987 and 1988 to 2006 (p. 25 of MassDEP’s Final WMA Permit and Response to Comments, July 2, 2008), and concluded that stream flow did not decrease significantly between the two time periods. In this analysis, median and mean October flows were significantly greater from 1988 to 2006 than the earlier years.

Comment # IV.B.2

Commenter: 04

“Approximately 4 miles upstream from the Biomass site is Texon Paper Company/Dam. The company has the ability to vary the river flow.”

Comment # IV.B.3

Commenter: 33

“I am alarmed by the magnitude of the water withdrawn from the river for cooling the facility. During those times when the river runs low, when in places river water is barely visible, taking (885,000 gallons per day of) water can not be good for wildlife, in particular larger fish including salmon. This can not be good for the river’s ecology. (I do not believe adequate monitoring of river flow past the site has been completed for a full year) I do not know if planers have considered the impact of two dams upstream on the availability of cooling water when river flow is at annual lowest levels. During the dry days of August and September, these dams may withhold more water to maintain water levels within their towns, allowing less water to flow past the Biomass utility, resulting in more stress for Russell wildlife.”

¹ The Nature Conservancy’s “Indicators of Hydrologic Alteration” is a software program designed as an analytical tool for comprehensively summarizing complex hydrologic variation with biologically relevant attributes. It examines over 67 ecologically relevant statistics derived from daily hydrologic data and is especially useful to assess whether the state of a perturbed system differs significantly from what it would have been in the absence of perturbation. See <http://www.nature.org/initiatives/freshwater/conservationtools/>

Comment # IV.B.4	Commenter: 29
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“There are several man-made factors which occur along this stretch of the Westfield River, upstream there is an operating hydro facility which affects water levels, there is a waste water treatment facility which releases into this river and is very near the proposed site, in addition there is a hydro facility mere yards away from this site which will also affect water levels. I am not a scientist but I cannot see how all of these man-made activities in this region cannot have a detrimental affect on this water resource. There is, in fact, no way they cannot affect the area.”

Response # IV.B.2-4	Commenter's: 04, 29 and 33
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EPA has considered the impact of upstream dam operations and discharges and has determined that man-made upstream activities are not likely to affect the proposed discharge at Russell Biomass or the effluent limitations applied to the discharge. Texon/Crescent Mills Dam operates as a run-of-river dam with a minimum bypass flow of 165 cfs. The dam shuts down operations when stream flow drops below the minimum flow; in other words, during lower flow periods the flow released is equal to the upstream flow. The Russell Wastewater Treatment Plant discharges an average monthly flow of 240,000 gallons per day in compliance with its NPDES permit (MA0100960). This permit ensures that the discharge from this facility maintains water quality to provide aquatic habitat and allow for recreational uses of the river. The Indian River Hydro Project (FERC Project No. 2631) will have an interim minimum bypass flow of 50 cfs.

Stream flow has been continuously monitored at three upstream gages since the early 1900s. These gages capture 90% of the flow in the watershed from the head waters to the proposed site. There are no activities between these gages and the proposed site that could interfere with stream flow to artificially create extreme low flow events; therefore, the upstream gages are a good representation of stream flow at the site. EPA used more than 70 years of daily flow USGS records to evaluate the impacts of water withdrawals on aquatic life. The maximum withdrawal allowed is less than 0.2% of mean annual flow and approximately 7% of the 7Q10 low flow (see calculation at Attachment A). EPA concurs with MassDEP's WMA permit that the withdrawal is of a low magnitude and is not expected to cause detrimental impact to the water dependent resources of the Westfield River.

Comment # IV.B.5	Commenter: 21
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“...this is a photograph taken by Henry Warchol. It's half a mile below the proposed Russell Biomass plant in October of 2007. And it's just a photograph, but I -- this is right below my home. Also, I live on this impoundment where the withdrawal would be just above the dam, where the discharge would be. And I've gone out there and photographed it myself, and walked across it, and you can walk across it without getting your knees wet. You're slipping the whole time because of all the algae on all the rocks. And it basically reminds me of the creek I grew up on in California. It's really not a river in the summer, during the extreme low flows, like we had in 2005 and 2007. This year, there's a water bonanza, but it's very unusual. This river is extremely low... my impression of the river is that it needs every drop of water that it can get.”

Comment # IV.B.6	Commenter: 04
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“I'm a lifelong resident of Russell and I really don't like what's happening here, but just the flows in the river is what I'm concerned with. Like Jana said and Piotr said, there's no flow gauge in Russell and they're taking these flows anywheres from five to ten miles upstream, and it's got nothing -- or

the one in Westfield, I'm not really sure where they get this 17.8 [cfs] as a low flow. But at low flow they're going to take 885,000 gallons and they're going to return 150,000 of heated, treated water. On April 27th [2009], I was fishing just above the Hill[/Dale] Rapids and this going to reinforce the flow thing. I was fishing above the Hill[/Dale] Rapids and within 15 minutes the river went to August or September flows. It dropped -- I mean, where -- I was having trouble wading, the rocks were showing, So I'm saying downstream at the effluent, that water is going to be so low at times..."

Comment # IV.B.7	Commenter: 09
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"I am concerned with the amount of water taken daily from the river. As you've seen previously, the pictures show many times there is no water. Also, along a good part of the stretch of this river, there's many points where it is generally a couple of feet deeper, and then you'll have other little areas where it does get deeper. It is not as deep as in West Springfield or Springfield, where at one of the points Mr. Boss says, oh, Springfield uses this much, West Springfield uses this much. We don't have the same kind of depth that they do."

Comment # IV.B.8	Commenter #: 16
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"There were some slides of a mill pond up there and as we all know, this is a year of plentiful water. There are many, many years when the water isn't as plentiful."

Comment # IV.B.9	Commenter: 33
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"This summer has been a rainy one. Please do not expect the Westfield River's flow through Russell to be this great every August and September. We should be prepared to meet the needs of the salmon, otter and other Westfield wildlife."

Response # IV.B.5-9	Commenter's: 04, 09, 16, 21 and 33
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The single lowest flow observed at the confluence of the three upstream branches as recorded by the upstream gages after 1965, when Littleville Dam was completed, was 17.5 cfs, on September 26, 2010. Prior to 2010, the lowest recorded flow after 1965 was 17.8 cfs, which occurred on August 19, 1970. As stated in the Fact Sheet and in this Response to Comments, EPA's evaluation of the impacts of withdrawal and discharge on aquatic life in the river is based on more than 70 years of stream flow data and low flow statistics. EPA is aware that the past year had higher rainfall and stream flows than is normally expected. The long record of stream flow data for this site includes major floods and extended droughts, including those times when the commenters felt that the river flow was very low.

EPA assumes the commenter refers to West Springfield Station, which withdraws process and cooling water from the Connecticut River. The Connecticut River is larger, and therefore, not directly comparable to the Westfield River. Nonetheless, West Springfield Station withdraws a higher percentage of the 7Q10 flow of the Connecticut River (8.4% compared to about 7% at Russell Biomass) and has a much lower dilution factor (12:1 compared to 93:1 at Russell Biomass).

The Westfield River experiences high peak flood stages and extreme low flow days, for instance, stream flow at the unregulated West Branch has varied from 12 cfs to 4,275 cfs. The Westfield River at the proposed site moves swiftly across a shallow riverbed composed of gravel and boulders wide enough to accommodate peak floods of more than 5,000 cfs. At lower flows, this width could give the impression that the river has very little water. However, the evaluation of withdrawal impacts is

based on recorded flows over more than 70 years. Both EPA and MassDEP determined that this record is an accurate representation of stream flows, and used the mean, 7Q10, and lowest recorded flows based on this record to determine that the proposed withdrawal is not likely to adversely impact the aquatic life in the Westfield River.

Comment # IV.B.10	Commenter: 05
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“I have lived in Westfield all my life. I am a board member of the Westfield River Watershed Association, Incorporated, the first incorporated watershed organization in the U.S.... the dilution factor is what I feel is a problem that will compound with all of the withdrawals that are presently taking place now and the future withdrawals like Middle Branch of the West Middleville Reservoir and flood control dam that is Springfield's standby water supply. We're going to be using that someday.”

Response # IV.B.10	Commenter: 05
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As described on page 14-15 of the Fact Sheet, EPA calculated a dilution factor of 112 based on the 7Q10 of the Westfield River (calculated from upstream gages) minus the upstream withdrawal from Russell Biomass. Using a more conservative 7Q10 flow based on data through 2011 and not considering any increase in flow from the increase in the size of the watershed between the upstream gages and the proposed site (19.4 cfs), EPA calculated a dilution factor of 93. Between the upstream gages and the facility, the Huntington Wastewater Treatment Plant (WWTP) and Russell WWTP both discharge to, but do not withdraw from, the Westfield River. The Huntington WWTP withdraws 0.19 cfs from well sources, and the Russell WWTP withdraws 0.45 cfs from well sources and the Black Brook Reservoir (an inactive backup source). Texon's NPDES permit authorizes a maximum daily discharge of 1.3 MGD to the Westfield River. According to annual reporting under the Water Management Act, withdrawals are generally less than discharge due to infiltration and inflow. Over the past decade, a maximum withdrawal of (0.63 million gallons per day) was reported in 2001. Each of the upstream dams has a minimum required bypass flow that must be met, all of which are well above the 7Q10 flows used to calculate the dilution factor (*See* RTC IV.B.2-4). Even if the reservoirs are used for water supply someday, the dams will be required to continue meeting minimum bypass flow regulated by the Army Corps of Engineers or the Federal Energy Regulatory Commission (FERC) in order to protect downstream aquatic life.

Comment # IV.B.11	Commenter: 30
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“It is also unclear whether the permit's conditions will be sufficiently protective under the increasing frequency and intensity of low-flow periods that is already being observed on the Westfield River, presumably due to climate change. For this analysis, I attach the letter I submitted previously on water withdrawals by the plant. This analysis of low-flow events has also been conducted and affirmed by Dr. Piotr Parasiewicz, using more sophisticated modeling techniques. I hope that EPA is considering that this plant, if built, will likely withdraw water and discharge pollutants every day for many years (or at least until the wood supply runs out or becomes prohibitively expensive). Over this time frame, increased effects of climate change are likely to be felt, including higher air and water temperatures, and, as hard as it is to believe this summer, increased frequency of drought.”

Response # IV.B.11	Commenter: 30
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As summarized in RTC IV.B.1, there is no indication, based on analysis using “Indicators of Hydrologic Alteration” or MassDEP's statistical analysis that flows have decreased in the past 20

years. The analysis of 7-day minimum flow and extreme low flow duration provided by Dr. Parasiewicz using the “Indicators of Hydrologic Alteration” suggests that 7-day minimum flows are lower and more variable, and the duration of extreme low flows has increased post-1988, compared to the years 1969 to 1987. However, this analysis includes only 18 years pre and post impact (1988), and the software recommends at least 20 years of data. By truncating the analysis at 1969, the natural drought events of the early and mid-1960s were excluded. EPA repeated Dr. Parasiewicz’s analysis using the years 1960-1984 and 1985-2009. In this comparison, the median, minimum, and maximum 7-day minimum flow increased post 1985. A comparison of RVA (Range of Variability Approach) statistics before and after 1985 indicates that the number of years in which 7-day minimum flows were less than 8.4 cfs decreased, while the number of years in which 7-day minimum flows were greater than 13.5 increased. The median duration of extreme flows increased 1.25 days, and was more variable, although the frequency decreased.

Finally, as presented in RTC IV.A.13 and IV.E.1-7, the effluent limitations included in the Final Permit are designed to be protective not only at the calculated 7Q10 low flow, but even at a very conservative stream flow equal to the lowest recorded flow (13.2 cfs). Even under severe low flow conditions, EPA determined that the permit would still be protective of aquatic life.

Comment # IV.B.12	Commenter: 03
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DEP cites the Westfield River’s status as “Low Stress.” The formula used to categorize the basin as “low stress” uses averaging (median flow rates). The average combines the volume of rapid spring runoff and of low dry periods, evening out the number at a level not representative of either time of the year. The River is “stressed” during a period when the summer’s low water is at its lowest, and when low flow lasts for a long period. Therefore the “Low Stress” status does not mean that the River does not have “stressed” periods. It does. I have observed very low prolonged low flows in the Westfield River. It is my opinion that the River does suffer from stress due to low flow periods and pollution.

Response # IV.B.12	Commenter: 03
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First, that the basin is considered “low stress” in this study had little bearing on the evaluation of this NPDES permit. The purpose of the study is to highlight areas needing further study and for defining mitigation for potential projects, not to play a role in permitting projects (e.g., just because a basin is low stress does not mean that additional withdrawals and/or discharges won’t impact the basin).

According to the 2001 Stressed Basin Report, the definition of a stressed basin includes consideration of stream flow quantity, quality, and habitat factors. The assessment based relative strength of the basin on quartiles (high stress basins included in lowest 25th quartile, low stress basins fell into the 75th quartile) for median 7-day low flow, median 30-day low flow, and median low pulse duration, which are not equivalent to a median annual flow. Still, EPA did not consider this assessment when calculating effluent limitations for the Final Permit.

C. Water Consumption

Comment # IV.C.1

Commenter: 01

“... In that picture there, there's where the water is coming from. It is three-quarters a mile long, it is 200-feet wide, it is 8-feet deep and less than 5 percent of this, this huge volume of water, will be used in cooling the turbines.”

Response # IV.C.1

Commenter: 01

EPA agrees that a small percentage of stream flow will be withdrawn for cooling water at the proposed facility.

Comment # IV.C.2

Commenter: 26

“How will the withdrawal of over 800,000 gallons a day for cooling purposes affect the health of the river?”

Comment # IV.C.3

Commenter: 36

“While not directly related to the NPDES permit, we note that the biomass plant would consume 1.13 cubic feet per second (cfs) of water (i.e., the amount of water withdrawn from the river that is not returned to the river). If the 7Q10 stream flow for the river at the site of withdrawal is 33 cfs, that means the project would consume 3.4% of 7Q10. We raise the issue because the cumulative impacts of these types of withdrawals have led to many New England rivers becoming hydrologically and biologically stressed, especially during periods of low flow.”

Comment # IV.C.4

Commenter: 31

“26. Part I.A.6(b) of the Permit limits the cooling water withdrawal to a maximum value of 885,015 gallons per day. The maximum volume the intake structure can deliver is 1.08 MGD, and we are pleased that the permit will not allow for this maximum withdrawal rate.”

Response # IV.C.2-4

Commenter's: 26, 31 and 36

In preparation of the Water Management Act (WMA) Permit, MassDEP reviewed stream flow impacts of the withdrawal, including comparison of the lowest observed stream flows with the predicted maximum withdrawal volume. In response to comments on the WMA Permit regarding water withdrawals, MassDEP stated “the maximum daily withdrawal of 1.37 cfs is approximately 5.6% of the 7Q10 and 7.7% of the lowest observed flow day over the past 40 years.” The lowest recorded stream flow observed after the construction of the upstream dam was 17.8 cfs. Using the more conservative 7Q10 flow calculated in this Response to Comments (19.4 cfs), the maximum daily withdrawal is approximately 7.1% of the 7Q10 flow and 7.8% of the lowest observed flow day after construction of the upstream dam (17.5 cfs in 2010).

MassDEP determined that the proposed withdrawal volume, relative to stream flow even under severe conditions, reflects a balance of water use among fisheries, wildlife, recreation, and industry. Because the withdrawal constitutes low percentages of the critical low flow statistics, and the fact that upstream withdrawals return most of the water withdrawn back to the watershed, MassDEP determined and EPA concurs, that a withdrawal of this low magnitude is not expected to cause detrimental impacts to the water-dependent resources of the watershed.

Comment # IV.C.5

Commenter: 03

In FERC's Environmental Assessment (EA) dated December 2, 2005, FERC biologists identified the Atlantic salmon and the American eel as "having the potential to be cumulatively affected by the rehabilitation and operation of the Indian River Project in combination with other activities such as construction (residential and commercial), and wastewater discharges in the Westfield River Basin."

The minimum flow to maintain short-term survival of aquatic species – 50 cfs – recommended at the Indian River site, is quite a bit higher than the DEP's permit condition in the WMA permit for Russell Biomass allowing them to draw water down to the lowest flow ever recorded, or 17.8 cfs.

Crescent Mill/Texon minimum flow requirements are 165 cfs. – This hydropower project is relevant to the Russell Biomass WMA permit because downstream releases flow into the river segment that includes the water withdrawal point for Russell Biomass.

The Crescent Project is required to release a project minimum flow of 165 cfs or inflow, whichever is less. This flow can be released via any combination of the project's turbine, spillway, or the fish bypass facility. The letter states that the project is generally operated in run-of-river mode, such that the outflow equals the inflow, thereby meeting and exceeding this 165 cfs minimum flow (Exhibit 8). Crescent Mill is required to shut down turbine operations and go to run of the river mode when the sum of the three upstream USGS gages drops below 165 cfs. Page 4 of this letter says that, "the requirement to shut down turbine operations at flows from 165 cfs is a protective control that eliminates the potential for Crescent Mill Dam operations to 'dry out' the river" (Exhibit 9). It is just telling that 165 cfs was chosen as the cutoff flow in order to not dry out the Westfield River, just a mile or so upstream of Russell Biomass. Even the fish bypass flow of 20 cfs at Crescent Mill is higher than the minimum flow allowed under the WMA permit. The vast majority of water used at the Crescent Mill dam is discharged back into the Westfield River through the NPDES-permitted Texon discharge. Russell Biomass, on the other hand, will return only 15% of water used back to the river. This further supports my opinion that MassDEP issued a WMA permit for Russell Biomass that was not protective enough of the Westfield River's fisheries resources.

"Article 402 requires licensee to release, from the Woronco Project (north and south dams) a minimum flow of 57 cubic feet per second (cfs), or inflow, whichever is less, as measured in the separate channels of the bypassed reach, for the protection and enhancement of water quality, fisheries, and aquatic resources in the bypassed section of the Westfield River. Although this required flow is for the segment of river downstream of Russell Biomass, it is once again indicative of a flow established by regulators that is meant to be protective of water quality and aquatic habitat, and it is much higher than the lowest levels allowed by the Russell Biomass WMA.

Response # IV.C.5

Commenter: 03

EPA is aware of the various hydro projects and their respective bypass flows on the Westfield River. There is an important distinction between a bypass flow at a hydro project and the withdrawal of cooling water at Russell Biomass. A minimum bypass flow defines operational criteria in which water diversions only occur when flows are maintained above a minimum flow rate. In this way, bypass flows restrict water diversions during those times when flow in the river is low. This is necessary because the turbines at hydro dams are typically large enough to pass high volumes of stream flow, and at low ambient flows, could divert all of the flow. For instance, the Crescent Mills turbines have a design capacity up to 700 cfs. If no minimum bypass flow was required, all of the

mean annual flow (634 cfs) could pass through the turbines and the section of the river between the dam and the tailrace would be dewatered. The minimum bypass requirement of 165 cfs ensures that the section of the river between the dam and the tailrace remains protective for wildlife. Still, at mean annual flow and maximum capacity of the turbines, the project could pass 74% of the flow (469 cfs) through the turbine. As natural flows approach 200 cfs, the percentage of the river flow that passes through the turbines would increase.

Alternatively, the withdrawal at RB would be a maximum of 1.37 cfs, or approximately 7% of the river at 7Q10 low flow, and less than 8% of the lowest recorded stream flow observed after the construction of the upstream dam (17.8 cfs). In other words, even under severe flow conditions (17.8 cfs), 92% of the flow would pass by the facility without impact. Because the withdrawal constitutes low percentages of the critical low flow statistics, and the fact that upstream withdrawals return most of the water withdrawn back to the watershed, MassDEP determined and EPA concurs, that a withdrawal of this low magnitude is not expected to cause detrimental impacts to the water-dependent resources of the watershed. *See* RTC IV.C.2-4.

D. Geology - Basin Characteristics

Comment # IV.D.1

Commenter: 33

“The Westfield River valley, in particular the 18 square miles of Russell, is a special place where steep granite escarpment rises above the river 1,000 feet to the South Quarter uplands. As anyone who has crossed the Westfield on the Mass Pike knows, the eastern side of the valley rises just as steeply with rocky walls of shale. This is a rift valley where two continental plates once collided. We are standing today on what was once the Iapetus Ocean (between 600 and 400 million years ago). That ocean closed when landmasses came together to form Pangea. Subsequently, millions of years later, the land split creating the Atlantic Ocean and the Rocky Mountains. The gravel this school is built on and the gravel you’ll see at Russell’s canoe landing across the river from the Biomass site is remarkably thick and cobbly. This landscape was also formed after the glaciers receded 10,000 years ago. Lake Hitchcock was formed in the Connecticut River Valley and an arm of the lake reached up the Westfield River. Glacial outwash gravel, cobbles and rubble washed down a thousand feet to Hitchcock’s shore here in Russell. All this material on the valley floor became an aquifer. It is this aquifer that drinks and returns cool water to the Westfield during hot summer days. This gravel aquifer enables the Westfield to be a Coldstream river supporting salmon. It is too easy to take this bounty of water and wildlife for granted, to heap wasteful, poorly planned use and developments on top of past thoughtless mistakes.”

Comment # IV.D.2

Commenter: 03

The Westfield River is characterized as having very low and very high seasonal flows. The basin’s geological features are very well illustrated in the US Geological Survey Professional Paper 1366 A-D (THE BEDROCK GEOLOGY OF MASSACHUSETTS 1988). The watershed consists of mountainous steep granite hills. When it rains, or there is snow melt, the water travels fast off the mountains and hills instead of seeping into the ground or running off the land surface at a slower rate.

Comment # IV.D.3

Commenter: 03

USGS’s Open File Report 68-136 (Exhibit 7) – Most of the lower elevation areas of Russell lies on top of a fan deposit. According to the map, it looks like the Westfield River used to flow downstream

west of Turtle Bend Mountain, basically following the path of present Route 20, and then into the center of Russell. He stated it is possible that some water from the Westfield River is currently being diverted into groundwater flow through the former channel, and then is discharged back into the Westfield River just downstream of the dam. He said it is also possible that diverted water would not be discharged back into the river at all. Depending on how much the two drinking water wells (Well #1 located in Bradley Brook drainage off of Pine Hill Road or Well #2 located further downstream in Strathmore Park) in Russell are being used, groundwater could be pulled from this old river channel or from the Westfield River itself, thus affecting flows in the area of Russell Biomass. It is *possible* that the Westfield River flow could be less than you would expect at Russell Biomass.

Response # IV.D.1-3	Commenter's: 03 and 33
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According to Water Resources of the Westfield and Farmington River Basins (Hydrologic Investigations Atlas HA-716), a large sand and gravel aquifer underlies the Westfield River from Westfield to the upstream branches. Gravel and sand aquifers generally have high hydraulic conductivity. In some cases or at certain times of the year, rivers can either gain flow from groundwater inputs or lose flow to aquifers. As the commenter points out, the cold water input to the Westfield River near the proposed facility that may support the cold water fishery during warmer periods may indicate a base flow contribution of cold groundwater from this aquifer.

The entire river valley, well upstream of the USGS gages, consists of the same gravel and sand glacial deposits. The lack of any change in geology between the upstream gages and the site of the proposed facility indicates that the three upstream gages are likely a good representation of downstream flows. If the upstream gages were dominated by till and bedrock deposits, which have low transmissivity, one might expect an abrupt change in groundwater/surface water interface when the river intercepts the gravel aquifer. Instead, the upstream gages are underlain by the same aquifer as the area between the gages and the proposed site. Therefore, little change in stream flow between the gages and the proposed RB site due to groundwater gains or losses is expected. The length of the historical stream flow record at the upstream gages also accounts for periods of severe drought, in which the river may lose stream flow to the aquifer. In these cases, the calculated 7Q10 already accounts for extreme low flows from interactions during drought periods upstream of the gages. In response to comments that the 7Q10 flow calculated in the Fact Sheet is not conservative enough, EPA recalculated water quality-based effluent limitations based on a more conservative 7Q10 flow (19.4 cfs) from USGS recorded gage data through 2011 with no consideration of inputs from the increase in watershed area between the upstream gages and the proposed site (formerly 10% increase). The resulting effluent limitations did not result in alteration of any of the permit limits because the technology-based limits in the Draft Permit were more stringent.

E. Stream Flow - Gauge Data

Comment # IV.E.1	Commenter: 21
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"But this map here, the yellow is the gravel aquifer, and that's one of the unique things about this river bed is that there's an immense gravel deposit here, and what I'm told is that the water can come from the aquifer up into the river bed or it can seep from the river bed down to the aquifer. And, again, that's one of the things that makes these photographs make sense. The withdrawals and the numbers you're working with, the 1710, that's all three miles upstream on that upper reaches, in forested, you know, area, and then they come down through Huntington around these broad, huge

open, flat areas where they're exposed to a lot of sun and evaporation and they're on top of this gravel bed. Nobody knows what the flows are down here. And to give a permit to do anything to that river, when you don't know what the flows are, is very, very foolish. I was told by Jim Bomgardner at DEP, who wrote the withdrawal permit of the Water Management Act permit, that they were going to require a gauge. He told me that personally in a phone conversation two weeks before the draft permit came out, and there was no gauge in the permit when it came out.”

Comment # IV.E.2

Commenter: 02

“And the third part, I know I hear it today, that we are not supposed here to talk about the water quantity; however, the amount of pollution is a function of dilution and the water quantity would need to be incorporated in this analysis. Unfortunately, the base for the permit on the water quality -- on the water quantity is very problematic. We base our decision on that measurement that are five miles upstream in the river, that we heard has this very interesting geology, but this geology also means that a lot of water can disappear before it comes to Russell, and there are no measurements at the location downstream of the facility, and we absolutely need this sort of measurement and this sort of diligence right at the location. We cannot base it on something that has happened much further downstream.”

Comment # IV.E.3

Commenter: 03

“DEP used streamflow measurements at the three upstream gauges at Knightville, Huntington and Goss Heights to permit the Russell Biomass plant. The gauge measurements do not accurately measure stream flow at the Russell Biomass site for three reasons.

(a). In my opinion, based upon my years of study of technical data and observations of the Westfield River, between the three gauges and the Russell Biomass site, water is recharged into the aquifer and discharged to the river. The amount of recharge and discharge occurring depends on the low and high water levels of water in the river. This means that the amount of water measured at the three gauges increases or decreases by the time it gets to the Russell site, due to recharge or discharge from the aquifer. This was not addressed in the permit and has a bearing on the volume of flowage at the RBM site. Flowage at the site has only been estimated using upstream gages. It is my opinion not measuring flowage at the site and not requiring a stream gauge at the RBM site is unreasonable. A stream gauge at the site is necessary to provide “reasonable protection” of the factors in M.G.L. c. 21G, 7(9).sec.??

(b). Second, DEP failed to consider the negative impact on the Westfield River from historic and ongoing sand and gravel removal operations in the watershed. I have observed the continuous and systematic removals of sand and gravel deposits in the Westfield River basin above and below the proposed RBM water withdrawal. This includes water withdrawals and sand and gravel operations by a company in Westfield that has a Water Management Act permit to withdraw .65 mgd.

DEP did not consider the future impact of many sand and gravel operations on the stream flow of the Westfield River.

Sand and gravel removal operations impact the Westfield River because when snow melts and rain waters fall, it percolates into the sand and gravel, buffering the rapid run off as it percolates thru the sub strata. The water is cooled in the lower strata and becomes, filtered and cooler, then upwelling into the river and along its banks. Based upon my years of study of technical data and observations of the Westfield River, the continuous and systematic removals of the many sand and gravel deposits especially in the upper sections of the river has negative effects on the River.

With the continuous removals (depletion) of these limited sand and gravel deposits in the Westfield River above the Russell Biomass site, it is predictable that future rapid runoff from the land to the River will be greater in the spring and whenever it rains. It is also predictable that there will be less runoff water entering the River in the summer especially in the summer drought periods because the water will no longer percolate into the depleted sand and gravel deposits instead the water will now run off the surface of the land and entering the River at a more rapid rate. The water extractions for sand and gravel operations and the massive amounts of permitted water withdrawals can only mean that the river's future condition will be greatly stressed.

(c) Littleville Dam Reservoir is a committed standby water supply for Springfield's future water needs. A pump station and pipeline are in place for water diversion whenever needed, it is also a flood control dam under the control of the Army Corps of Engineers. DEP did not consider the volume, frequency and timing of Springfield's future water withdrawals from Littleville Lake/Reservoir when it issued the Russell Biomass permit.

Comment # IV.E.4	Commenter: 03
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The Huntington Water Department is authorized to withdraw 0.12 mgd (from two wells close to the River near Route 20, and one reservoir in Blandford) below the stream gages. The Texon USA facility is authorized to withdraw 0.721 mgd from the River, below the gages. There has been no calculation of evaporative loss from the impoundments behind the Texon and Indian River dams. An unknown number of private wells (individual home owners and wells for schools and other facilities that may draw less than 100,000 gallons per day) may affect streamflow. Therefore, the gages do not reflect how much water is flowing past the Russell Biomass site, but rather how much is in the River *before* the Huntington, Texon, and private well withdrawals.

Comment # IV.E.5	Commenter: 03
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City of Westfield's water pollution control facility was required to conduct a dye test when it expanded its facilities. Based on the dye testing, the dilution factor for discharging treated sewage into the Westfield River was found to be 5.0. EPA noted in the Fast Sheet for this facility's draft NPDES permit that the dilution factor for this facility, if it had been based on 7Q10 data from the USGS gaging station in Westfield, would be about 7.0. The real valued for dilution is quite a bit lower than the calculated version. The reason for the discrepancy is not given, but it is an example of how calculating flows based in nearby gages does not always lead to correct site-specific predictions. [Also note that available dilution for this facility will be lower after Russell Biomass withdrawals.] The use of upstream gages as a basis for determining how much water is flowing past the Russell Biomass facility, after the Huntington and Texon withdrawals and with unknown groundwater flow patterns, may not provide a reasonable basis for predicting the impact on the River at the site. Gaging upstream and downstream of the site before and after site development should have been instituted as part of the permitting process and would have been entirely consistent with WMA Policy. In June 16, 2008 letter from Tighe and Bond to Dierdre Cabral, Tighe & Bond stated that it would be too difficult to put a gage downstream of the Indian River dam because of large boulders, rocky substrate, and frequent changes in the river bottom profile below the dam. This difficulty was never noted by Tighe & Bond when they developed their mixing zone analysis for wastewater discharge using a river bottom profile shaped as a triangle and used measurements from a single day prior to an October 2005 flooding event that likely changed the morphology of the site in question. The river flow estimates for the Russell Biomass water withdrawal are based on flows 4 miles upstream and disregard the alluvial geology of the valley, and therefore the high likelihood of water flow between

the surface and groundwater. This may mean that at times of drought the flows at the site may be much lower than the estimates based on the three upstream gauges.

Comment # IV.E.6

Commenter: 31

“35. A river gage should be established at the site. There is some anecdotal evidence that came out during the Water Management Act appeal that the river flow conditions estimated from the three upstream USGS gages may not actually be representative of the site. Actual flow readings should be taken at the site and compared to the USGS gage readings at that time.”

Comment # IV.E.7

Commenter #: 06

“Stream Gauge Needed at the Proposed Incinerator Location. If the project is allowed to withdraw or discharge any water from or into the river (and it should not be allowed), a stream gauge would be required at the proposed incinerator location to document what the stream flows actually are there. This gauge needs to be monitored and calibrated frequently by an independent third party to ensure that it is working correctly.”

Response # IV.E.1-7

Commenter's: 02, 03, 06, 21 and 31

The geology and underlying aquifer in the Westfield River between the upstream gages and the proposed site is the same as the geology upstream of the gages, and as such, the upstream gages are a good representation of the streamflow at the proposed site. EPA has no reason to expect that streamflow would be substantially altered by the aquifer underlying the proposed site when the aquifer is the same as that upstream of the gages (*See Response to Comment IV.D.1-3 for discussion of Westfield River geology*). According to the WMA permit, the upstream gages measure stream flow over 90% of the watershed area to the proposed site. No activities between the gages and the site exist that would artificially create extreme low flows. Therefore, the WMA permit did not include a condition requiring the permittee to install a stream gage near its withdrawal location. However, MassDEP reserved the right to modify this requirement in the future.

Extrapolating stream flows at ungaged sites is a complex issue. Development of effluent limitations for this permit was facilitated by the presence of three, gaged upstream branches with a lengthy historical stream flow record from which to calculate flow statistics. In this case, the 7Q10 low flow statistic was based on historical flow data at the upstream gages from 1935 to 2011. Construction of the Knightville Dam in 1965 regulated flows from the Westfield River, and as a result, the 7Q10 flow based on these regulated flows is higher than that used in the Draft Permit. EPA chose a more conservative approach by using a longer period of record, which encompasses more low flow events and drought years.

In fact, using the 7Q10 low flow statistic for calculating permit limits for this facility is more stringent than is required by the Surface Water Quality Standards. 314 CMR 4.03(3) specifies the most severe hydrologic condition at which water quality criteria must be applied for several types of waterbodies. The regulation states “in waters where flows are regulated by dams or similar structures, the lowest flow condition at which aquatic life criteria must be applied is the flow equaled or exceeded 99% of the time on a yearly basis, or another equivalent flow agreed upon by the Department and the federal, state or private entity controlling the flow.” In other words, the mandated low flow statistic for dam regulated rivers (such as the East and Middle Branch Westfield Rivers) is the 99% duration flow (the flow exceeded 99% of the time each year). According to USGS

gage information, the 99% duration flow for the West Branch Westfield River, Middle Branch Westfield River, and Knightville segments are 7.2 cfs, 1.8 cfs, and 15 cfs, respectively. This value is greater than the 7Q10 low flow statistic for these segments (5.79 cfs for West Branch, 1.4 cfs for Middle Branch, and 10.9 cfs for Knightville). In this case, MassDEP and EPA determined that the more conservative 7Q10 flow should be applied, rather than the less stringent 99 percent duration flow.

EPA believes that the 7Q10 flow calculated using the upstream gages is representative of low flow conditions at the proposed site. Any water losses from solar radiation are compensated by water inputs from runoff and tributaries that join the Westfield River between the upstream gages and the site. According to the Permit Application, these inputs include an unnamed stream, Pond Brook, Roaring Brook, Bearden Brook, and Bradley Brook. Streamstats, a USGS streamflow application that uses regression analysis to approximate streamflow at ungaged sites, estimated the 7Q10 flow from the additional 22 square miles of drainage area at 1.09 cfs. In addition, EPA and MassDEP have determined that there are no activities between the gages and the proposed site that could interfere with stream flow and artificially create low flow events. In calculating the original 7Q10 flow used in the draft permit, the permittee adjusted the upstream value by 1.109, which is equal to a 10% increase in the size of the watershed (*See* RTC IV.E.8).

Nonetheless, several comments have expressed concern that this statistic is too high and the observed stream flow at the site is much less than the estimated 7Q10 flow. In response to these comments, EPA calculated a more conservative 7Q10 flow from USGS gage data from 1935 through 2011 (which included severe low flows during August and September 2010) and did not adjust the upstream value to account for the increase in the size of the watershed.² After accounting for the Russell Biomass proposed withdrawal, the adjusted 7Q10 low flow is 19.4 cfs, compared to the 7Q10 value of 22.92 cfs from the Fact Sheet (see adjustment calculation at Attachment A). This more conservative 7Q10 flow did not alter the effluent limitations in the permit. At summer high ambient temperatures (equal to upper lethal limits for Atlantic salmon) and maximum discharge temperature, the increase in the ambient temperature at the point of discharge at the more conservative 7Q10 flow is expected to be approximately 0.03°F (Attachment B, Case 1). At a temperature of 68°F (representative of cold water fish habitat in the state water quality standards), the increase in the ambient temperature at the point of discharge is expected to be approximately 0.2° (Attachment B, Case 2). At 13.2 cfs, which is the minimum recorded flow (prior to dam construction), the increase in the ambient temperature at the point of discharge at an ambient temperature of 68°F is expected to be approximately 0.3°F (Attachment B, Case 5). Technology-based limits for total residual chlorine are more stringent than water quality based limits even at a dilution factor based on either the more conservative 7Q10 flow of 19.4 cfs or the minimum recorded flow on record (prior to dam construction) of 13.2 cfs (see calculation at Attachment A). EPA has determined that the discharge from the facility is unlikely to have adverse impacts on water quality in the river at severe low flow (7Q10) or at the lowest recorded flow (13.2 cfs). *Also see* RTC V.A.6-7.

² To calculate low flow statistics, EPA used DFLOW 3.1, a tool developed by EPA to estimate stream flows for low flow analysis and water quality standards. DFLOW inputs daily stream flow records (such as those records from the systematic data collection program maintained by the USGS) and calculates user-specified hydrologically-based design flows using methodology recommended by USGS (e.g., log-Pearson Type III flow estimating technique).

Comment # IV.E.8

Commenter: 12

“The other variable in the calculation of the receiving water’s temperature is the volume of the flow in the River at the discharge point. Water flow volumes at the upstream gauges are relatively easy to establish. However, it is also necessary to estimate the effect of streams flowing into the river between the gauges and the discharge point. The EPA fact sheet uses an "adjusted 7Q10" river flow rate number of 23.13 CFS, but does not indicate what adjustments have been made to what numbers to arrive at this result. Further, we do not know if this adjustment(s) should be further adjusted to compensate for reduced stream inflows during hot summer months when small tributary streams may run completely dry. Once again, small changes in these inflow estimates can significantly affect the calculation of the receiving water s temperature during warm summer months.”

Response # IV.E.8

Commenter: 12

As stated on p. 14-15 of the Fact Sheet, the 7Q10 flow was calculated by adding the 7Q10 values from the gaged upstream flows (Station numbers 01179500, 01180500, and 01181000). The log-normal distribution of the upstream 7Q10 flows were used because it resulted in a more conservative 7Q10 flow (21.9 cfs versus 24.97 cfs). The 7Q10 value estimated from the upstream gages was multiplied by a ratio of 1.109 to adjust for the increase in watershed area between the gages and the site, which results in input from several streams as well as runoff. This adjustment results in a 7Q10 flow of 24.29. Finally, to account for intake withdrawal at the facility, 1.37 cfs (maximum daily withdrawal) is subtracted from the estimated 7Q10 flow (24.29 cfs). In the Fact Sheet, the 7Q10 at the bank discharge location for permitting purposes is 22.92 cfs.

This method adjusts the downstream 7Q10 flow based on area, rather than 7Q10 flows of the tributary streams between the upstream gages and the sites. However, in response to comments herein that the calculated flow was not conservative enough, EPA calculated a more conservative 7Q10 flow based gage data from 1935 through March 2011 without accounting for any downstream inputs (20.8 cfs) and subtracting the withdrawal from the facility (1.37 cfs). The resulting 7Q10 flow (19.4 cfs) would not result in alteration of any of the permit limits from the Draft Permit.

Comment # IV.E.9

Commenter: 06

“No Idea of River Flow at the Incinerator Location. The lack of information on stream flow at the facility is egregious and just one reason why zero liquid discharge is the only option that makes any sense. Stream flow data only exist for flow miles upstream before the river encounters significant sand and gravel aquifer areas in Huntington and Russell. See U.S. Geological Survey Hydrologic Atlas HA-716 that clearly documents this. During times of low flow, much of the stream flow would be expected to go underground near the proposed location of the incinerator and not be available for withdrawal, dilution, or fish. Photographs and testimony of people who have watched the river for years and decades clearly show that the water simply is not there at certain times of year. I have seen parts of the river at times that look like disconnected puddles of water that is not flowing. The project proponents ignore all this evidence and pretend that all the flows measured miles upstream will be available for their use at the incinerator location.”

Response # IV.E.9

Commenter’s: 06 and 12

As stated in RTC IV.B.2-4 and IV.B.5-9, EPA and MassDEP have determined that the 70+ years of historical stream flow records from the three upstream gages is an accurate representation of stream flow at the proposed discharge site. According to the Hydrologic Atlas HA-716, the sand and gravel

aquifer extends from Westfield, MA far upstream of the three gages and underlies most of the river bed from the source waters of the three branches to the proposed site. As such, water from the river is not expected to infiltrate the aquifer in any greater quantity between the gages and the proposed site than it would upstream of the gages (*See* RTC IV.D.1-3 and IV.E.1-7). EPA has based the limits in the Final Permit on an accurate, conservative 7Q10 low flow statistic, but as a measure of conservatism, also determined that the limits would be protective even at the lowest recorded streamflow (prior to dam construction). *See* RTC IV.E.1-7. EPA has addressed the availability of zero liquid discharge in RTC VIII.C.1-4.

Comment # IV.E.10	Commenter: 02 L
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“I would like to draw your attention to a hydropeaking operation that takes place on the Westfield River in the vicinity of the planned Russell Biomass project. The flows recorded at the USGS station 01183500 in Westfield, MA document the dramatic instantaneous flow fluctuations between the confluences of all three branches of the Westfield River (see figure below). This week [September 10 through September 17, 2009] flows in the river are almost doubled for short periods of time, twice a day. This is most likely due to hydropeaking operation, probably from Texon Dam. Such dramatic flow changes may have direct effect on the habitat conditions in the Westfield River at the location of planned discharges from Russell Biomass affecting water quantity and quality. This newly discovered fact should be taken into consideration in the process of an issuing NPDES permit for Russell Biomass.”

Response # IV.E.10	Commenter: 02
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The Crescent Mills dam located at the Texon facility operates as a run-of-river dam with a minimum bypass flow of 165 cfs. EPA was told that this operation does not engage in hydropeaking (phone conversation with Kevin Webb, ENEL North America on March 3, 2010). In fact, hydropeaking is a direct violation of the FERC license requirements for this dam. The commenter has not offered an alternative source of instantaneous flow fluctuations at this gage other than the Crescent Mills Dam.

At this time, it is unclear why the real-time data from USGS station 01183500 exhibits these flow fluctuations. One possible explanation is that this gage receives stream flow from a number of tributaries downstream of the Crescent Mill dam, including Little River, which begins at the outlet of Cobble Mountain Reservoir. The reservoir supplies 12.4 billion gallons of water annually to retail and wholesale customers in Springfield, Ludlow, Agawam, and other surrounding towns (Springfield Water and Sewer Commission Annual Report 2010). Water from the reservoir is discharged to the headwaters of the Little River via a spill gate at the base of the dam or through an aquaduct. Downstream of the reservoir, an impoundment known as The Gorge can direct flow back to the Little River or divert flow to the West Parish Filtration Plant (MassDEP Westfield River Watershed Water Quality Assessment Report, 2001, Appendix B).

Still, dramatic fluctuations in river flows can cause a measurable difference in the dilution factor of a river. However, in this case, the fluctuations are observed at river flows between 300 and 800 cfs, which is far greater than the 7Q10 flow (19.4 cfs) used to develop the RB permit limits and conditions. In summary, EPA found no evidence that the observed fluctuations in flow are due to operations at the Crescent Mill dam, but regardless of the source of the fluctuations, they are unlikely to impact the conditions of the permit because they occur at much higher river flows than that used in the derivation of permit limits.

F. Fish Congregate After Rapids (oxygenated)

Comment # IV.F.1	Commenter: 04
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“... and where the effluent is, is right after a rapid, and the water is highly oxygenated there. Fish congregate there. I've caught hundreds of trout right there over the years. A few hundred feet downstream from there, there's another spring that runs in on opposite side of the river, on the west side, which is another place where fish congregate when the water gets warm. It takes a dogleg to the left [east] and there's a huge, deep pool, another place where cold-water species hang out. My fear is it's going to destroy that part of the river which holds holdover, plus wild trout and it's going to destroy it for miles downstream.”

Comment # IV.F.2	Commenter: 03
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“The brook on the west side of the river at the bend in the river, would be an ideal thermal refuge for migrating adult salmon, and also for juvenile salmon that inhabit the river. When the water temperature rises above 70 degrees, salmon, both juvenile and adults, would be tucking their noses at the outlet of this unnamed stream, just as the fish did at the Dixon Pool on the Penobscot, or the fish I described below the brook on the Matane River. If this pool were in Canada or on the Penobscot, I would be haunting it in my efforts to catch an adult Atlantic salmon.”

Comment # IV.F.3	Commenter: 03
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“One of the best places to fish on the river is directly below the Russell Dam. This location is below the proposed intake and above the proposed effluent outlet for the Russell Biomass plant. This area is good for fly fishing because of its well oxygenated water and healthy deep pools that result from the dam spillage and the Blandford Stage stream. I am able to show fly fishing enthusiasts exactly where to cast to catch brown, rainbow and brook trout below the Russell dam.”

Comment # IV.F.4	Commenter: 03
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“I have seen fish gather at a place in the middle of the river just below the Russell dam where two currents join together and run over the rocks. This is because they thrive on well oxygenated water.”

Comment # IV.F.5	Commenter: 03
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“I have observed the nests and spawning activities of brown trout below the Russell dam. I know that there is breeding and brown trout reproduction occurring in the river because I catch brown trout which are smaller than what the state stocks in the river. The state stocks Trout downstream of the proposed WMA withdrawals.”

Response # IV.F.1-5	Commenter's: 03 and 04
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The discharge represents approximately 1% of the 7Q10 flow (conservative value of 19.4 cfs), and less than 2% of the lowest recorded upstream flow (13.2 cfs in September, 1953). Based on the high available dilution and rapid mixing of the river, EPA has determined that the thermal plume will be adequately mixed at the point of discharge so as not to increase the ambient temperature more than 0.6°F during worst-case conditions (highest rise in temperature due to plant at 7Q10 low flow). These congregation areas will remain cool and continue to serve as protective habitat for cold water species in the future. See RTC V.A.6-7, V.C.2-7, and IV.E.1-7.

G. Fish Kills

Comment # IV.G.1	Commenter: 08
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“...BG's Ford in, Westfield, Mass, the owner. You probably all know who I am. Everybody here knows who I am, but --- We do all the physical stocking of trout in the Westfield River, in this section right here. We've stocked over 75- to a hundred-thousand fish physically. For 30 years we've been doing this. I've seen the results of hot water discharge, Strathmore Paper. For the next half a mile after the discharge, there was no aquatic life, there was no fish, there was no bottom, there was nothing. So I know what -- that was only a 2-inch pipe. I'd hate to see what a bigger pipe does.”

Comment # IV.G.2	Commenter: 08
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“We've had three fish kills on the river, that picture you got right there. There was a limited fish kill that year. That was due to the dam's draw down at Texdown. It wasn't a real major fish kill and it wasn't reported because it was too late in the findings. Of course, we had a major one at Strathmore Paper, which was devastating. That wiped out everything.”

Response # IV.G.1-2	Commenter: 08
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Because it is not clear when the referenced fish kills may have occurred, EPA is unable to evaluate possible causes. However, EPA believes that the effluent limitations and requirements of the Final Permit will ensure that water quality standards are met and existing uses (including excellent habitat for aquatic life) are maintained. As such, no fish kills are likely to result from the proposed discharge at Russell Biomass.

At Strathmore Paper (NPDES Permit MA0004995) prior to 1994, maximum daily flows from Outfall 006A were as high as 5 million gallons per day at temperatures as high as 105°F. The flow and temperature of this discharge was much greater than will be allowed at Russell Biomass under the Final Permit. In addition, (now defunct) Strathmore Paper was a different type of facility than the proposed Russell Biomass facility and discharged different pollutants. Part I.A.6.b of the Russell Biomass Final Permit prohibits the use of water or wastewater treatment chemicals containing aluminum or aluminum compounds. In response to comments submitted during the public comment period, Part I.A.1.g of the Russell Biomass Final Permit prohibits any increase in instream aluminum concentration downstream of the discharge. *Also see* RTC VI.D.2. The impact from the proposed discharge at Russell Biomass should not be compared to the historic discharge from Strathmore Paper because the two discharges are not the same magnitude and Russell Biomass's permit contains more stringent limits designed to ensure that fish kills do not occur.

Comment # IV.G.3	Commenter: 08
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“We got tagged fish in the river. Every year we've been tagging 30 fish in the river for 25 years. So we have a good idea how fish kills affect them, how hot water affects them.”

Response # IV.G.3	Commenter: 08
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EPA acknowledges that the Westfield River supports a diverse fish community and includes species sensitive to pollution and thermal stress, including Atlantic salmon. Based on analysis of the potential impacts of the discharge on the biological community in the Westfield River, EPA does not believe

that the discharge and heat load will adversely impact fish. *See*, for example, RTC V.A.6-7, V.C.2-7, and VII.A.9 and 10.

H. Wild and Scenic

Comment # IV.H.1	Commenter: 19
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“I have an e-mail that indicates that it might not be a wild and scenic river as we see Russell, and the reason is, and I have to read it. A study was done in 2002 that ended at the Huntington/Russell line. The reason for this is that in order to be a scenic river, it must be a clean, free-flowing river, and within the Town of Russell, there are three dams; and, therefore, it is not a free-flowing river.”

Response # IV.H.1	Commenter: 19
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The commenter is correct. As stated on p. 6 of the Fact Sheet, “the Wild and Scenic designation applies to 78.1 miles of the Westfield River, primarily along the East Branch, Middle Branch and West Branch. The farthest downstream stretch of the river to receive the Wild and Scenic designation includes 0.8 miles of the Main Stem in Huntington, upstream of the proposed Russell Biomass facility.”

I. Other Impacts

Comment # IV.I.1	Commenter: 26
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“What will happen to the wildlife in the river and along its shores?”

Response # IV.I.1	Commenter: 26
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Based on analysis of the potential impacts of the discharge on the biological community in the Westfield River, EPA does not believe that the discharge and heat load will adversely impact wildlife in the river. *See* RTC V.A.8, V.B.6, V.C.2-6, V.D.1-2, and V.D.4.

Comment # IV.I.2	Commenter: 26
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“What will be the effect on the river from the diesel trucks going to and from the plant along the proposed Frog Hollow Road extension? This extension will pass right along the river bank in some parts and material that drops from these vehicles could end up in the river.”

Response # IV.I.2	Commenter: 26
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See RTC at VI.G.11 and IX.G.1.

Comment # IV.I.3	Commenter: 26
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“Will pollutants released into the river seep into wells used for drinking purposes? Just how much water pollution is acceptable to the USEPA and how will it affect the health and well being of people and animals in Russell and surrounding communities?”

Response # IV.I.3	Commenter: 26
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The discharge is not expected to contain any harmful pollutants in detectable amounts. The Final Permit contains a limitation that the effluent contains “no detectable amount” for 126 priority pollutants contained in chemicals added for cooling tower maintenance.

V. Thermal

A. Permit Limits for Temperature

Comment # V.A.1	Commenter: 31
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“10. In footnote 3 to Part I.A.1. of the draft permit, it states that the maximum temperature limit of 85 degrees and the maximum daily free available chlorine is an instantaneous maximum, not a maximum daily limit. We support this limit as an instantaneous maximum.”

Response # V.A.1	Commenter: 31
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EPA notes the support of an instantaneous maximum limit for temperature and total residual chlorine. EPA has retained these limits in the Final Permit.

Comment # V.A.2	Commenter: 31
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“11. The goal of the permit should aim to keep the water as close to ambient water temperatures as possible. The maximum temperature limit is fairly protective, but the permit should perhaps also have a monthly average temperature limit which is lower than the instantaneous maximum. This would further reduce impacts to the cold water fishery resource, particularly during the colder months.”

Response # V.A.2	Commenter: 31
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EPA determined in the Fact Sheet (p. 26-27) and elsewhere in the Response to Comments that an instantaneous maximum temperature of 85°F is not likely to increase ambient temperature more than 0.6°F even under worst-case conditions (Attachment B, Case 3). *See* RTC V.A.6-7, V.C.2-7, and IV.E.1-7. Therefore, a more stringent monthly average limit is not necessary to protect ambient temperatures. Furthermore, in colder months the discharge temperature will be closer to the cold water fishery standard of 68°F (the Permittee estimates discharge temperatures of approximately 65-71.5°F, *see* Table 11-6 p. 11-27 of the Draft EIR).

Comment # V.A.3	Commenter: 31
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“**Part I.A.7. Water Quality Requirements** 28. Regarding part (f), that the operation avoid large day-to-day variations and rapid rates of change, we located a 1992 memorandum from Warren Kimball of MassDEP regarding Thermal Discharge/NPDES review. It is our understanding that this memorandum continues to guide MassDEP on the review of thermal discharges for NPDES permits. This memorandum gives a criteria for avoiding large day-to-day variations of “Require flow equalization over a 24-hour period, no routine shutdowns during the winter months (December-May).” We think it might be prudent for the permit to prohibit routine shutdowns during the winter months.”

Comment # V.A.4	Commenter: 12
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“Paragraph 7.f. The draft permit's direction to "avoid" large day-to-day temperature fluctuations is meaningless in the absence of mandatory operational requirements for continuous monitoring of discharge temperatures. As observed earlier in this statement, short-term temperature fluctuations can prove especially harmful to juvenile salmon.”

Response # V.A.3-4	Commenter's: 12 and 31
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Part I.A.1. of the Final Permit requires the Permittee to continuously monitor temperature of the effluent at Outfall 001 prior to mixing with other waste streams. Part I.A.9. of the Final Permit requires the Permittee to conduct a thermal monitoring study during the first summer of operation to ensure that the ambient temperature of the Westfield River remains protective of existing uses, including habitat for cold water fish populations.

The discharge is not expected to impact ambient temperatures in the river even under severe low flows (i.e., 7Q10) or less and maximum summer temperatures. As such, no large day-to-day fluctuations would be likely even in the event of a facility shutdown because the facility will not cause fluctuations in ambient temperatures. Large fluctuations in ambient temperature are less likely during winter because average flows are higher and discharge temperatures are at a minimum. Therefore, the Final Permit does not prohibit shutdowns in winter months.

Comment # V.A.5	Commenter: 25
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“It is also noted that there is an inconsistency in the outfall designation. Under the temperature monitoring program requirements, the discharge to the river is referred to as Outfall 001. Based on the description of Outfalls as listed on page 12 of the Fact Sheet, Outfall 001 is the Cooling Tower discharge before mixing with stormwater from Outfall 004. The location of the actual outfall does not appear to have been assigned a specific Outfall designation. For clarification, we suggest that this be assigned the next sequential outfall number of 006, see the table below summarizing the outfall designations.”

Response # V.A.5	Commenter: 25
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EPA acknowledges that both the monitoring location for effluent discharges from cooling tower blowdown and low volume waste, and the outfall at which effluent from the facility discharges to the receiving water have been referred to as Outfall 001. In the Final Permit, Outfall 001 is designated in Part I.A.1. as cooling tower blowdown and low volume waste (before combining with stormwater) and the term “discharge location” is used in Part I.A.9.a.ii to refer to the location at which effluent discharges to the Westfield River.

Comment # V.A.6	Commenter: 30
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“**Temperature** As is the case for aluminum, the temperature data used by the applicant was collected upstream of the Texon plant. This is problematic partly because water temperatures on two of the three river branches may be influenced by dams, and so may not be representative of water temperatures further downstream after water has traveled and been held in impoundments. Further, the Texon plant’s NPDES permit allows thermal discharges that can alter water temperature by up to 5 degrees Fahrenheit, a provision the plant has violated in the past. In sum, actual water temperatures may be greater at the Russell site than are suggested by the upstream data, and additional, detrimental thermal loading by the plant’s discharges is a possibility. Again, it does not seem excessively onerous to require that the applicant conduct some site-specific monitoring. Why has this not been required?”

Comment # V.A.7	Commenter: 03
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Every time I fished this summer, I took the temperature of the Westfield River. I got no reading above 75 degrees Fahrenheit, however, this summer season was cooler and wetter than normal.

Readings from feeder streams such as Blandford Stage directly below the intake and above the dam are generally 8 to 10 degrees lower, or 65 to 68 degrees Fahrenheit. Summer temperatures can exceed 80+ degrees Fahrenheit. Additionally, there are deep pools where the Westfield River bends just below the effluent outlet which stay much cooler than the rest of the river even when the river warms up in the summer.

Response # V.A.6-7	Commenter's: 03 and 30
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Two of the three upstream branches of the Westfield River are controlled by dams. The USGS gages from which EPA obtained the temperature data are located below the dams. The impoundment at Crescent Mills Dam, even though the dam is operated as run-of-river, as well as other natural sources of heating between the upstream gages and the proposed RB site could potentially cause the ambient temperature to increase. Water quality data from the Environmental Research Center at Westfield State College in 2009 suggests that summer temperatures could differ as much as 3.6°F between the gages and downstream sites (e.g., sampling stations at Countryside Woodcraft and Whipperton Country Club). In addition, one commenter suggests that the 2 cfs discharge from the Texon facility is adequate to increase the temperature of the Westfield River at Russell Biomass. This may be possible, although EPA expects that because the effluent from Texon comprises less than 10% of ambient volume even at severe low flow (7Q10 flow), any increase in temperature from the effluent would be minimal after being mixed for 3 miles.

EPA evaluated the expected rise in temperature from the proposed technology-based effluent limit at Russell Biomass at several temperatures. EPA estimated the rise in temperature due to the discharge at projected maximum ambient temperature (82°F) and average summer temperature (73°F) based on the recorded gage data, as well as a more conservative summer temperature of 68°F, which is the recommended maximum daily temperature for a cold water fishery (Attachment B). *See* definition of cold water fishery at 314 CMR 4.02. In fact, EPA projects that as the ambient temperature of the river increases, the thermal impact of the RB discharge decreases because the ambient temperature approaches or exceeds the maximum discharge temperature (85°F). The temperature rise in the river from the proposed discharge at Russell Biomass is not expected to increase the river temperature downstream of the discharge more than 0.3°F at the lowest recorded flow (13.2 cfs) and an river temperature of 68°F (Attachment B, Case 5), less than 0.6°F at the lowest river temperature and highest effluent temperature (Attachment B, Case 3), and impacts at higher temperatures are expected to be less (on the order of 0.03°F or less). *Also see* RTC IV.E.1-7.

EPA acknowledges that the NPDES permit for Texon USA allows a maximum discharge temperature of 90°F and a delta T of 5°F. The facility has exceeded the maximum daily temperature limit of 90°F on two occasions (maximum temperatures of 90.2° and 91°F) between December 2005 and September 2010 (period since last permit issuance). The facility monitors upstream and downstream river temperatures from April 1 through October 31 each year. According to the DMRs (2006 to 2008), the maximum increase in ambient temperature due to the Texon discharge was 0.4°F in June 2007. There is no indication, based on the DMRs, that the facility ever violated the delta T provision of their permit, as the commenter suggests. Based on Texon's analysis of temperature increases during the re-issuance of their NPDES permit in 2005, the facility's discharge would have to exceed 115°F to cause more than 5°F increase in ambient temperatures (Letter from Tighe&Bond dated October 19, 1998).

Additional ambient temperature monitoring prior to permit issuance has not been required because EPA believes that the historical temperature data from the USGS gages (collected periodically since 1955) is more representative of ambient temperatures in the Westfield River than a limited sample of temperature data collected at the site. For instance, if data had been collected in 2009, the high summer flows would suggest ambient temperatures are lower than they would typically be, and analysis based on these lower temperatures would not be as protective as the analysis based on maximum recorded temperatures. However, Part I.A.9 of the Final Permit does require a thermal monitoring study to be conducted during summer low flows during the first year of operation, at a minimum, to confirm that fish populations in the Westfield River (including cold water species) are protected. EPA may also require additional temperature monitoring during subsequent years if the first year of monitoring is not sufficient to confirm that the resource is protected, for instance, if summer flows during the monitoring study are unusually high.

Comment # V.A.8	Commenter: 12
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“It is interesting to note that, at the same time this project was being planned, the owner of the dam and electric generating facilities at the site, the Indian River Power Supply Inc., obtained a license from the Federal Energy Regulatory Commission (FERC) to restore and operate the power plant, on a "run of the river" basis, with a projected electricity production of 3.2 GW per year. The FERC conducted an environmental analysis of this licensing action, in the course of which it obtained input from the Federal Fish and Wildlife Service. Based on a Fish and Wildlife Service recommendation, FERC included a permit requirement that the licensee maintain a minimum flow of 50 CFS in the reach of the river lying parallel to the intake pipe and powerplant as a conservation flow " " to protect habitat in the bypass reach" until such time as the the cognizant Federal and state agencies determine a permanent bypass flow requirement. FERC, Environmental Assessment, Indian River Power Supply, Inc., Indian River Project, Project No. 12462-000 (Dec. 2 , 2005). The 50 CFS requirement is just about twice the minimum flow EPA has accepted here to provide dilution of heated discharge water from this proposed plant. Why this discrepancy? EPA's calculations accept an assumption proffered by the Proponent that the receiving water temperature is 73°F.) According to the fact sheet, this assumption is "based on the average summer water temperature at upstream USGS gages (sic). Fact sheet at page 26 of 52.

This assumption is questionable, especially during summer months. By the time water arrives at the Indian River dam, it has traveled several miles from the upstream gauges under hot sun and warm air, causing the temperature of this water to rise. Further, surface water flowing over the top of the dam (to meet the 50 CFS minimum flow requirement) has also been exposed to hot sunlight and warm air, and is considerably warmer than water deeper down in the pool behind the dam. Plainly the thermal discharge is flowing into water that is warmer than EPA's estimate. More precise measurement of the receiving water temperature during summer months is necessary. If a receiving water temperature of 78°F is substituted for EPA's lowball 73°F estimate in the formula that appears on Fact Sheet page 26 of 52 , the resultant final temperature at the point of discharge is approximately 79°F, or 26°C. If the receiving water temperature is 80 the resultant final temperature at the point of discharge is approximately 81°, or 27°C. These seemingly small differences in temperature can prove fatal to salmon parr and other cold water species in the river.”

Response # V.A.8

Commenter: 12

The United States Fish and Wildlife Service did recommend a minimum bypass flow of 50 cfs until a permanent bypass flow is determined. This flow represents the minimum flow that the operator must direct to the bypassed reach (the area of the river between the dam and the location of the discharge of the dam tailrace) in order to protect habitat in the bypassed reach from being dewatered. *Also see* RTC IV.C.5. The 7Q10 low flow statistic used in EPA's analysis is the lowest 7-day flow that occurs once in ten years. In other words, the 7Q10 flow is representative of severe natural flow conditions and is commonly used as a conservative flow value to calculate effluent limits. There is no discrepancy – the flows are meant to regulate two separate things. The USFWS minimum bypass flow is required to maintain flow over the dam to prevent the bypassed reach from low water levels. If natural flows in the river are low enough that the minimum bypass flow cannot be maintained, operation of the dam would be restricted. On the other hand, EPA uses the 7Q10 low flow statistic to conservatively represent the minimum available dilution at the discharge to ensure that even under extreme low flows the effluent is not likely to impair designated and/or existing uses, including protection of aquatic life.

On p.26 of the Fact Sheet, EPA estimated the increase in ambient temperature using both an average summer temperature of 73°F and a maximum summer recorded temperature of 82°F. EPA wanted to ensure that mixing of warm effluent into water at both average summer and maximum temperatures would not raise the ambient temperature. EPA evaluated both temperatures to ensure that the increased temperature difference between the effluent at maximum discharge temperature and (cooler) average summer temperatures would not cause greater ambient temperature increases. EPA estimates that the rise in temperature due to the effluent at the proposed technology-based limit at a more conservative 7Q10 flow than that used in the Fact Sheet (19.4 cfs versus 22.92 cfs) would be 0.03°F at an ambient temperature of 82°F (Attachment B, Case 1) and 0.3°F at an ambient temperature of 68°F (the maximum daily temperature recommended in the Massachusetts Water Quality Standards for cold water fish) (Attachment B, Case 5). EPA expects that the technology-based temperature limit of 85°F, which results in expected temperature increases more stringent than would be allowed by either the cold water or warm water temperature standards at 314 CMR 4.05(3)(b)(2), will be protective of water quality.

EPA is unsure how the commenter calculated the temperature differences in this comment. Substituting the temperatures into the equation on p. 26 of the Fact Sheet using the 7Q10 flow from the Fact Sheet, EPA estimates:

$$T_f = (22.92 \text{ cfs} * 78F) + (0.206 \text{ cfs} * 85F) / (22.92 + .206 \text{ cfs}) = 78.06^\circ F \quad \Delta T = 0.06^\circ$$

$$T_f = (22.92 \text{ cfs} * 80F) + (0.206 \text{ cfs} * 85F) / (22.92 + .206 \text{ cfs}) = 80.03^\circ F \quad \Delta T = 0.03^\circ$$

Based on analysis provided on p. 26 of the Fact Sheet, and repeated here at a more conservative 7Q10 value, EPA expects that the effluent limitation in the Final Permit will be protective of water quality. At the lowest river temperature (32°F) and highest effluent temperature (85°F), and 7Q10 flow, which is approximately the highest rise in temperature between the influent and effluent, the increase in river temperature due to the effluent is expected to be less than 0.6°F (Attachment B, Case 3). Part I.A.9 of the Final Permit requires a thermal monitoring study to confirm that ambient temperatures

remain protective of fish populations (including cold water fish) and includes narrative standards to protect fish migration and spawning habitat in addition to the end of pipe numeric limit. *See* RTC V.A.6-7 and IV.E.1-7 regarding the effect of higher ambient temperatures on the delta T resulting from the discharge of heat.

B. In Stream Temperature Monitoring Study

Comment # V.B.1	Commenter: 36
<p><i>“Thermal Dispersion Study</i> As conditions of the permit, Russell Biomass must continuously monitor the temperature and flow being discharged to the river. In addition, the permit contains a requirement to conduct a study to characterize the thermal plume that will result from the permitted discharge (Condition 9a). The study would consist of continuously monitoring temperatures for two consecutive weeks during the summer. One set of data loggers would collect ambient temperature (as measured at a location between the Russell Dam and Russell Biomass Outfall 001). Additional data loggers would be deployed at cross-river transects running every 50 feet from Outfall 001 downstream for a distance of 250 feet. The data collected would be used to determine if the discharge is causing or contributing to an exceedance of any state water quality criterion. One might conclude that the amount of heated effluent discharged to the river (0.2 cfs) would have a negligible plume during the smolt passage season. However, if results of the Thermal Plume Characterization Study indicate that the plume is larger than expected, or reaches more than half-way across the river, we recommend requiring the Permittee to conduct a supplemental study that would characterize the plume during the smolt migration season. Water temperature affects both smolt physiology and behavior, and exposure to elevated water temperatures could adversely impact the ability of smolts to survive in salt water. Therefore, it is important to limit their exposure by minimizing the plume and providing a zone of passage free of thermal influence.”</p>	

Response # V.B.1	Commenter: 36
<p>The Thermal Plume Characterization study will confirm that aquatic life in the river is protected and that the technology-based effluent limitation does not violate the narrative criteria in the Final Permit. These provisions include protection of zones of fish passage; spawning, development/growth, residence, feeding, and other natural behaviors of indigenous populations. Part I.A.9.a. of the Final Permit requires the study to be conducted during the fall because this period will likely be representative of the highest rise in temperature between the influent and effluent concurrent with low streamflow and warm ambient air temperatures, and is also biologically important for protection of early life stages of some salmonids (e.g., brown trout, brook trout), if present.</p>	

Smolt migration typically occurs in spring when the river experiences peak flows from snowmelt and rainfall. Because the flow is likely to be high during smolt migration (compared to EPA’s temperature analysis during fall when streamflow may be lower), the thermal plume will likely be rapidly mixed and smolts will not experience elevated river temperatures as a result of the discharge of heated effluent from the facility. Nonetheless, if the thermal plume study indicates that mixing of the thermal plume is not rapid, and the size of the plume is larger than expected, EPA has broad discretion to require additional monitoring. For example, under Section 308 of the CWA (33 USC 1318(a)), monitoring may be requested in “determining whether any person is in violation of any such effluent limitation, or other limitation, prohibition, or effluent standard, pretreatment standard, or standard performance.” Part I.A.7.e. of the Final Permit specifies several requirements that the

thermal plume must meet, one of which is to maintain a zone of passage. As such, EPA may, in the future, require additional monitoring should any information suggest that the thermal plume may not meet the requirements of Part I.A.7.e or any other requirement in the Final Permit.

Comment # V.B.2	Commenter: 31
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“I.A.9. Thermal Monitoring Requirements 31. The thermal plume study is slated for the first year of activity, but if the conditions are wet like this year, the results may poorly reflect drought conditions. The permit does not appear to require additional characterization in a more typical year or to postpone the study until there is a low flow year. A stipulation should be added that the study be completed in “typical” low flow conditions, with a definition of what this means.”

Comment # V.B.3	Commenter: 25
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“In-Stream Temperature Monitoring: The permit includes requirements to conduct a two-week monitoring program to evaluate thermal impacts to the river under summer conditions during the first year of operation. While the general concept is reasonable, there are some specifics of the study design that may be problematic. As this summer has shown, normal low-flow conditions may not be present each summer. The draft Permit requires in-stream temperature monitoring be conducted during the first year of operation. Russell Biomass recommends modifying this requirement to allow EPA to extend the compliance date if summer-time flows are higher than average values and we have offered suggested language modifications below...” [See Comment V.B.10]

Response # V.B.2-3	Commenter’s: 25 and 31
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EPA will interpret the results of the thermal plume analysis with consideration of the flow during the time the study was conducted. EPA acknowledges that the study is limited in temporal scope and although it is timed to be representative of the highest plant temperature rise (effluent temperature minus influent temperature concurrent with warm days in late autumn), natural variability in ambient temperatures and stream flow from year-to-year may influence the study. If the thermal plume study indicates that temperatures or flows during the study are not representative of desired conditions, EPA has broad discretion to require additional monitoring to ensure that the requirements of the Final Permit are being met. *See* RTC V.B.1

Comment # V.B.4	Commenter: 31
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“32. The ambient temperature should be measured above the impoundment where the river is free flowing, since the impounding of the water may impact the river temperature and not reflect the true ambient temperature of the Westfield. This is important, given the designation of this river as a cold water fishery resource.”

Comment # V.B.5	Commenter: 25
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“The program requires that temperature monitoring for background conditions be conducted half-way between the Indian River hydro dam and the discharge location. However, this location may be unsuitable because it is in a deeper, pooled section of the river and the temperature regime is likely to be significantly cooler under low flow conditions than the shallower stretch where the discharge will occur. This may result in data that reflect more of a thermal impact than what is actually attributable to the discharge itself. We recommend that the permit requirement be modified to allow the upstream monitoring location to be closer to the discharge, but no less than 15 feet upgradient of the discharge.

This will allow the background readings to be more characteristic of the stretch of river where the discharge is located.”

Response # V.B.4-5	Commenter's: 25 and 31
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The thermal plume study is designed to ensure that the technology-based effluent limitation does not violate the narrative criteria in the Final Permit, including protection of a zone of passage and fish habitat (including cold water fish populations). Ambient temperature upstream of the impoundment may not be representative of the river temperature at the discharge, and may obscure interpretation of monitoring results at the discharge. However, EPA acknowledges that a temperature reading mid-way between the dam and the outfall, as required by Part I.A.9.a.ii of the Draft Permit may not be representative of the shallow, fast-moving water at the discharge. The Final Permit requires that the Permittee monitor ambient temperature “*downstream of the Indian River dam and at a depth and flow representative of, but out of the influence of, the discharge location...*” See Part I.A.9.a.ii of the Final Permit.

Comment # V.B.6	Commenter: 31
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“34. EPA should demonstrate how the plume study required in the permit will demonstrate compliance with Massachusetts Surface Water Quality Standards Implementation Policy for Mixing Zones from 1993 (online at http://www.epa.gov/waterscience/standards/mixingzone/files/MA_MZ_Implementation_Policy.pdf). The study requires that the temperature loggers be placed at transects every 10 feet between the outfall and the first 50 feet downstream, and then every 50 feet between 50 feet and 250 feet downstream of outfall 001. Is the mixing zone assumed to be 250 feet? This is not explained in the Fact Sheet. According to 314 CMR 4.03(2), mixing zones are supposed to be “as small as feasible” and it is not clear if this has truly been achieved. Also, it is likely that there is a mixing zone for the Russell Wastewater Treatment Plant, a bit upstream of the intake pipe and on the other side of the shoreline. Are the two mixing zones intersecting each other? Will fish passage be impacted?”

Response # V.B.6	Commenter: 31
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The objective of the thermal plume study is not to demonstrate compliance with the Implementation Policy for Mixing Zones, but, as stated on p.27 of the Fact Sheet, to demonstrate that water quality and narrative provisions in the Final Permit are met and to confirm the estimated in-stream temperatures resulting from the discharge as calculated. The Final Permit does not grant the Permittee a mixing zone at the discharge. Due to the available dilution of the effluent even at severe low flow (7Q10) and the rapid mixing afforded by the River in the area of the discharge, EPA assumed complete mixing of the effluent upon contact with the receiving water (i.e., “end of pipe”). As such, no mixing zone is warranted because the Permittee is expected to meet Water Quality Standards and the conditions of the Final Permit at the point of discharge.

Based on EPA’s calculation of thermal impacts at severe low flow (7Q10), the Permittee will not cause a rise in temperature more than 0.2°F during summer even at ambient temperatures of 68°F (the maximum daily temperature for cold water fish) (Attachment B, Case 2) and is expected to cause no discernable rise in temperature when ambient temperatures approach 83°F (the maximum daily temperature for warm water fish) (Attachment B, Case 1). In this case, the technology-based effluent limitation of 85°F results in a rise in temperature that is more stringent than the rise in temperature allowed by either the water quality standards for cold water (3°F) or warm water (5°F) fisheries. At

7Q10 and the highest rise in effluent temperature between intake and discharge (river temperature of 32°F and discharge temperature of 85°F), the rise in river temperature is expected to be less than 0.6°F (Attachment B, Case 3). Even at the lowest recorded flow (13.2 cfs), the effluent is expected to cause an increase in the ambient temperature less than 0.3°F at an ambient temperature of 68°F (Attachment B, Case 5). The rise in river temperature due to both the proposed Russell Biomass facility and the Russell WWTP discharges are expected to be minimal and are not likely to interfere with zone of passage for migrating fish.

Because the water quality standards are met at the end of pipe (based on complete mixing), no mixing zone is required or has been applied to the Final Permit. *See* RTC V.D.1-2. The required thermal plume study is designed to confirm EPA's temperature calculations and to ensure that water quality standards and the narrative requirements of the Final Permit are met at the point of discharge.

Comment # V.B.7	Commenter: 25
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"The program also requires that the temperature probes be placed at mid-depth in the river and at specific distances from the water's edge. As indicated by the historical data, large fluctuations in flow rates can occur over a 24-hour period that impacts the depth and width of the river. During summer dry periods this can be more than a 10-fold change in flow rate and in the summer of 2005 the 24 hour change exceeded a 100-fold difference. Based on this, establishing appropriate individual temperature monitoring locations for a two week period is exceptionally difficult for this particular river system. It should be recognized that if water levels drop after probes are placed, some probes could be exposed to the air for portions of the study period. On a 90 degree day, this would result in the dry probes reading significantly above the discharge and river water temperatures. Such results would create significant problems for data interpretation, given the requirement to log data every 15 minutes.

Because the depth of the river at the center of the river is only a few feet at average flow and portions of the river in near the edge of the water which are of interest are shallower, minimal differences in temperature through the water column depth are expected to occur. To address the issue of variable flow depth, we recommend placing the temperature probes on the bottom of the river. This will more clearly define the location and will also help to address the issue associated with varying depth of the river, even over short time periods."

Response # V.B.7	Commenter: 25
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Because of the generally shallow depth and high turbulence in the river at the discharge, EPA expects little temperature difference between the surface and bottom of the river. Monitoring temperature closer to the bottom of the river would also target potential impacts to salmonid eggs and fry, which are associated with the bottom. The Final Permit has been changed to require all temperature probes be placed nearer to the bottom of the river. *See* Part I.A.9.a.iii of the Final Permit.

Comment # V.B.8	Commenter: 31
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"33. The thermal plume study calls for temperature loggers at 5, 15, and 22 feet away from the east bank at each of the transects, but not all the way across the river. CRWC is concerned that this will not provide enough information about the plume dispersal. It is not clear how the study will help ensure compliance with part I.A.7(e)(d) "minimal contact with surrounding shorelines" if the study will involves only one point of the surrounding shorelines. How was the study design for the thermal plume work formed? Is it based on other similar projects? If so, how applicable were the conditions

to the Westfield River at the discharge point? Is mid-depth representative enough for estimating effects for all fish, macroinvertebrates, and mussels? Has the study design been peer reviewed or in some other way reviewed to ascertain the design will produce the needed/desired data?"

Comment # V.B.9

Commenter: 25

"The problem of the varying width of the river under variable river flows is more problematic. Under average flow conditions, the width of the river is approximately 97 feet, but only 31.9 feet wide under the 7Q10. In addition to the risk of the probes going dry altogether, as the water depth decreases at the fringe of the river, solar heat gained from the river bank can cause temperature of the water right at the river margin to warm. In locations near the edge, where the water depth can decrease significantly due to flow changes, it is reasonable to see some temperature changes that are not associated with the discharge but are due to short term changes in depth. One approach to this problem would be to establish locations for the probes based on the estimated width of the river under the 7Q10 conditions, instead of requiring probes to be arbitrarily placed at 5, 15, and 22 feet from the river's edge. It should also be noted that the center of the river under 7Q10 conditions is approximately 16 feet from edge of water near the location of the discharge.

Therefore, we recommend that probes be placed at the centerline of flow, defined as the deepest location along each transect, and at the estimated coordinates associated with 5 feet from the waters edge based on the 7Q10 flow and at a point midway between this and the centerline. This will provide reasonable assurance that the probes will not go dry and will provide data that are less likely to be impacted by the variability in flow that can reasonably be expected over a 2-week time period. We also recommend that the language with respect to location of probes for the up-stream control transect match that for the downstream transects to assure the best comparative data."

Response # V.B.8-9

Commenter's: 25 and 31

The purpose of the thermal study is to obtain measurements of the centerline and bank temperatures to ensure that water quality standards are met. The study was based on similar requirements in other NPDES permits (e.g., West Springfield) and both the draft and final thermal plume characterization studies have been reviewed by several EPA scientists familiar with thermal plume studies.

In the Draft Permit, the estimated locations (at 5, 15, and 22 feet from the bank) approximated the right, center, and left bank locations at 7Q10 flow. However, the stream flow at the time of the study may or may not be comparable to 7Q10 conditions. If probe locations are based on 7Q10 conditions and the river flow during the study is much higher (as it was in summer 2009), the study would not accurately characterize the temperatures because all three probes would be located nearer to the right bank, with no probe on the west bank, as CRWC points out in their comment. Therefore, the Final Permit does not require probe locations based on the 7Q10 flow.

Instead, the Final Permit requires that, at the time of the study, probe locations are estimated at the centerline of flow, within 5 feet of the right bank, and within 5 feet of the west bank. *See Part I.A.9.a.iii of the Final Permit.* In this way, EPA ensures that the data collected will be representative of the center and bank temperatures and can evaluate whether the plume successfully minimizes impact with the river bank at the time of the study.

Finally, the Westfield River at the discharge is generally shallow (estimated depth at mean flow is 4 feet and can be as low as 1 foot at 7Q10 flow). Given the depth, coupled with rapid mixing provided

by the riffle, EPA expects little temperature difference between the surface and bottom. The Final Permit allows the probes to be located at the bottom of the river to ensure that the equipment remains submerged throughout the study. However, if, due to flow fluctuations, any of the thermistors are exposed during the study, the Permittee should document the occurrence to allow consideration of the event during data analysis.

Comment # V.B.10	Commenter: 25
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“Recommended permit modifications are as follows:

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. EPA may upon written request extend the compliance date for completion of the thermal monitoring program if summer time flows are above seasonal average values.

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 ~~004~~ 006 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~~ a minimum of 15 feet upgradient of outfall ~~004~~ 006. Locations of probes are to be as follows: one station at the center line of flow, a second located approximately 5 feet from the estimated edge of flow based on the 7Q10, and the third located midway between these two locations. (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 ~~004~~ 006 and extending 50 feet; and (2) approximately every 50 feet between 50 feet and 250 feet downstream of outfall ~~004~~ 006. 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)~~ one station at the center line of flow, a second located approximately 5 feet from the estimated edge of flow based on the 7Q10, and the third located midway between these two locations. At each of the three stations, temperature (measured to the nearest 0.5°F) shall be monitored ~~at mid-depth~~ with probes located on the bottom of the river. 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 I.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.”

Response # V.B.10	Commenter: 25
<p>EPA has specified the point of discharge to receiving water as the “discharge location” in the Final Permit. <i>See</i> RTC V.A.5. The locations of the probes will be estimated at the time of the study and will include a centerline, right bank, and west bank location. <i>See</i> RTC V.B.8-9. EPA has changed the timing of the thermal study from peak summer operating conditions in the Draft Permit to the first fall of operations after permit issuance between September 15th and October 31st (Part I.A.9.a. and Part I.A.9.a.i.). In considering the projected operation of the cooling towers and ambient conditions, EPA determined that early autumn (late September through October) would best approximate worst-case conditions when river flows are likely to be low and the discharge temperature is likely to be high coincident with warm days. In addition, this time period overlaps with the spawning period for many salmonids, and therefore is of particular biological interest. Rather than approximating peak discharge flows (as in Part I.A.9.a.i. of the Draft Permit), the new thermal study requires the permittee to report hourly average and maximum discharge temperature and flow at Part I.A.9.a.v. As a result of the change in the study period, the following condition was removed from Part I.A.9.a.v in the Final Permit: “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.” Part I.A.9.a.v of the Final Permit requires reporting of discharge temperature, flow, ambient air temperature, and stream flow during the study, which will allow EPA to evaluate ambient and discharge conditions during the study. <i>See</i> Part I.A.9 of the Final Permit for the thermal study requirements.</p>	

Comment # V.B.11	Commenter: 12
<p>“Page 11 of 15: Paragraph 9. iv. Wide swings in the discharge temperature may not be evident from hourly average temperatures. The Permittee should be required to report such fluctuations in temperature that are indicated in the raw data.”</p>	

Response # V.B.11	Commenter: 12
<p>The operation of cooling towers generally minimizes any wide swing in discharge temperature, because, unlike once-through operations, the effluent is cooled prior to discharge. The discharge temperature depends more on the ambient air than on water temperatures, which are not expected to change rapidly from hour-to-hour. Still, in response to the comment EPA has requested the Permittee submit all recorded temperature data (<i>see</i> Part I.A.9.a.iv of the Final Permit), from which EPA can determine if temperature fluctuations have occurred. In addition, upon EPA’s request under Part II.A.3 of the Final Permit (Standard Conditions), the Permittee “shall furnish to the Regional Administrator, within a reasonable time, any information which the RA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or the determine compliance with this permit.”</p>	

Comment # V.B.12	Commenter: 31
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“36. The dam at the Russell Biomass site is currently undergoing renovation to re-establish hydropower. The dam is owned by Indian River Power Supply, LLC and they have a license exemption under the Federal Energy Regulatory Commission (FERC). FERC records for the facility under P-12462 indicate that Indian River hydro will be removing sediment upstream of the dam, and a study will be made in the first summer of return to operation to determine the minimum discharge flow rate required to sustain habitat in the bypass reach of the Project. The dynamics of the thermal plume will be affected by the configuration of sediment in the river bed and flow release patterns of the hydropower operations. The thermal plume study should be repeated when Indian River Hydro becomes operational and a bypass flow rate is established.”

Response # V.B.12	Commenter: 31
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The minimum bypass flow recommended by USFWS is 50 cfs, which is greater than the severe 7Q10 flow used in EPA’s calculation of effluent limits; therefore, during the low flow conditions evaluated in the Final Permit, the hydroelectric operation must be operated as run-of-river (i.e., river flow cannot be held back or diverted at flows less than 50 cfs). EPA believes it is not likely that minimum bypass flows would be lower than the 7Q10 low flow used in the Final Permit. Therefore, EPA does not believe that the operation of the hydropower dam will affect the thermal plume from the Russell Biomass facility. Upon EPA’s request under Part II.A.3 of the Final Permit (Standard Conditions), the Permittee “shall furnish to the Regional Administrator, within a reasonable time, any information which the RA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit.” In addition, under Section 308 of the CWA (33 USC 1318(a)), monitoring may be requested in “determining whether any person is in violation of any such effluent limitation, or other limitation, prohibition, or effluent standard, pretreatment standard, or standard performance.” If EPA believes the bypass flow established after operation of the dam has the potential to impact mixing of the thermal plume, EPA can require the Permittee to conduct additional thermal monitoring.

Comment # V.B.13	Commenter: 12
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“Paragraph 9. The permit should require the thermal monitoring requirements set forth in this paragraph to be monitored by an independent outside engineering consultant (paid by the Permittee) to assure that all of the specified monitoring requirements are being met.”

Response # V.B.13	Commenter: 12
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The Final Permit specifically prohibits the Permittee from not complying with the monitoring requirements in Part II.C.1.e (Standard Conditions), which states “that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or both.” See RTC II.C.1-8.

Self-monitoring requirements are standard practice in NPDES permits. However, Chapter 6 of the Technical Support Document for Water-Quality Based Toxics Control (EPA 1990) states “[s]ince most of the information gathered in compliance monitoring results from permittee self-monitoring,

quality assurance is as important as compliance with limits.” Part II.C.1 of the Final Permit requires that the Permittee conduct monitoring in accordance with EPA-approved test procedures at 40 CFR Part 136, and that monitoring records are retained for at least 3 years, which EPA may access upon inspection of the facility under Part II.C.2 of the Final Permit.

Comment # V.B.14

Commenter: 12

“Paragraph 9. v. This paragraph authorizes the final Permit to "be modified, or alternatively, revoked and reissued to incorporate additional and/or revised requirements" if thermal monitoring indicates that discharges exceed State water quality criteria. This paragraph should further provide that plant operations may be limited or terminated until revised operating requirements are developed, approved, and thereafter implemented by the Permittee.”

Response # V.B.14

Commenter: 12

If thermal monitoring indicates that the discharge exceeds the numeric and/or narrative conditions of the permit, the Permittee is in violation of Part I.A.7.a of the Permit. Part II.A.1 of the Permit (Standard Conditions) defines the Permittee’s duty to comply with the conditions of the permit; the Permittee remains in violation until the requirements of the permit have been met. EPA has a range of actions it is authorized to take in the event of a permit violation, including enforcement action, permit termination, revocation and reissuance, and civil and/or criminal penalties. EPA considers this range of options and takes appropriate action based on the individual violation.

Comment # V.B.15

Commenter: 03

“Slide 11 – the draft NPDES permit allows RB to dump cooling tower blowdown and other waste into the discharge pipe at a location on a riffle area, 500 feet down stream of the plant site. The permit says the water can’t be hotter than 85 degrees.”

“One question we had about the cooling water is on a 100-degree day or a 90-degree day, we would like to have an explanation of how the water in the cooling tanks is going to go from what the ambient temperature is, say 90 or a hundred degrees, to 85. How will the company get that water down to 85 degrees?”

Response # V.B.15

Commenter: 03

Cooling tower “blowdown” water is water that has already been cooled in the cooling tower. Wet mechanical draft cooling towers, such as those proposed for the Russell Biomass facility, are designed using many important factors, including the head load that must be serviced; the flow rate through the tower; the “range” of temperature the cooling tower can operate over; and the “approach” to ambient “wet-bulb” temperature that the cooled water can be cooled to. Importantly, the ambient “dry-bulb” temperature is not used when designing and operating a cooling tower. For an explanation of wet-bulb temperature, the reader is referred to *Cooling Tower Fundamentals* (SPX 2009).

As stated above, the cooling tower blowdown temperature is a function of the ambient environmental conditions (i.e., the “wet-bulb” temperature, not “dry-bulb” temperature). When designing a cooling tower, manufacturers review local climatic conditions to determine the 0.4%, 1%, or 2% wet bulb exceedance temperature listed for the closest meteorological monitoring station. The percentages represent how often the maximum conditions are likely to occur. For example, the 0.4% value

translates to about 35 hours per year of ambient wet-bulb exceedances over wet-bulb design value. Manufacturers then add an allowance (typically 2 degrees) to account for inlet air recirculation.

Therefore, on hot 100-degree or 90-degree “dry-bulb” temperature days, the cooling tower blowdown will not be at this temperature. Rather, it will be at the cooling tower design temperature (ambient wet-bulb plus the design “approach” temperature).

The facility is required to meet the maximum daily temperature limit independent of the ambient wet-bulb temperature. If, for any reason, the facility exceeds the permitted temperature, it must take steps to get back into compliance with the permitted temperature, including de-powering the facility. Based on the available data and above discussion, EPA does not expect permitted temperature exceedances.

C. Warm Water vs. Cold Water Fishery

Comment # V.C.1	Commenter: 12
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“Paragraph 7. e. This paragraph addresses the "thermal plume" produced by the power plant, and its impact on the "indigenous population of the receiving water." This reference to "indigenous populations" can be read to exclude populations of Atlantic salmon, which once were indigenous to the Westfield River but are currently being added in an established, ongoing effort to restore this fishery. The term may also exclude trout species that added to the Westfield River each year. The term "indigenous" should be changed to "existing".”

Response # V.C.1	Commenter: 12
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40 CFR §125.71 defines balanced, indigenous population as “a biotic community typically characterized by diversity, the capacity to sustain itself through cyclic seasonal changes, presence of necessary food chain species and by a lack of domination by pollution tolerant species. Such a community may include historically non-native species introduced in connection with a program of wildlife management.” Under the definition applied in NPDES regulations, the term “indigenous” in this case does include Atlantic salmon (which are indigenous to the area) or trout species stocked in connection with wildlife management programs under MassWildlife.

Comment # V.C.2	Commenter: 16
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“Below that dam -- in the mill pond, there's quite a layer of sediment and the water gets heated up in the summertime and who knows what's in that silt. Same thing down in the other ponds. But below the dam, when the water is -- in the summertime and it's low, the rocks down below there, as they are in whole river system, they get heated, and the heat discharges into the water, and below -- well, along the whole stream, in all of those different streams, the West Branch, the Middle Branch and the East Branch, there's all types of springs that come into the area. And below the dam, there's some springs, when the water in the summertime or in the low periods of water, the fish go to these springs, and there are several right in that discharge area, as there are many, many other springs. There are an abundant amount of trout that are still in the river throughout the year. It's not a warm-water fishery, as many claim.”

Comment # V.C.3

Commenter: 02

“Furthermore, as I have reviewed the data, I have to say that I disagree with the termination that we deal here with cold-water fisheries; that species that are in the target of this community, the information that we know is we should expect Salmon here in this river, is enough to make sure that we will manage this river for cold-water fauna, not for warm-water fauna.”

Comment # V.C.4

Commenter: 03

“Slide 10 – one of the uses of the Westfield is a cold water fishery, according to DEP but in fact the Water Management Act permit that the agency issued treated this river as if it was a warm-water fishery. And I will be submitting today the testimony that outlines the serious flaws in that water withdrawal permit, and those same flaws are present in this NPDES permit, because it basically adopts the theory that 885,000 gallons a day of withdrawal, evaporated 85 percent of that is not detrimental to the river.”

Comment # V.C.5

Commenter: 27

“In the Fact Sheet which accompanies the Draft Authorization, EPA provides background information on both the plant and the Westfield River, and the classification scheme used by the Massachusetts Department of Environmental Protection (DEP) to evaluate compliance with Massachusetts state Water Quality Standards found at 314 CMR 4.00. The entire Westfield, according to the Fact Sheet, has been classified as a warm water fishery.

This classification as a warm water fishery was given despite the fact that coldwater species were found in the Westfield near the location of the proposed Russell Biomass plant. The Fact Sheet also quotes Massachusetts Water Quality Standards as stating that when coldwater species are found in water not found to meet coldwater standards, the Massachusetts Division of Fish and Wildlife must protect the coldwater species present as an existing use.

First, the Fact Sheet is wrong in stating that the entire Westfield is classified as a warm water fishery. Only the lower reaches of the river, including the section where the proposed plant would be located, has been so classified by MA DEP. The MA Division of Fish and Wildlife in its commentary on the proposed plant in 2006, describes the area where the plant is located as a highly sensitive area, a transition zone between the warm and coldwater sections of the river. This is according to a letter sent to Steven R. Pritchard, Secretary, Executive Office of Environmental Affairs, dated October 27, 2006, by Massachusetts Fish and Wildlife Assistant Director Thomas W. French.

Throughout the Fact Sheet, EPA accepts the designation given to the relevant section of the river as a Class B warm water fishery, despite the fact both trout and salmon were found to be located in the section of the river adjacent to the plant, and despite the fact Massachusetts water quality regulations provide that if coldwater species are found in the river, they are to be protected as an existing use. If that is fact the case, then it is inappropriate under Massachusetts regulations to apply the warm water temperature standard as EPA does through the whole Fact Sheet, and in its permit decision, for determining the acceptable level of thermal pollution allowed from the Russell Biomass discharge.

This then, has an impact on the analysis that is conducted both under the Clean Water Act, and the anti-degradation provisions contained under the Massachusetts Clean Water Act and regulations.”

Comment # V.C.6	Commenter: 03
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When it rains, sheets of water run down the steep rock face of Tekoa Mountain and into the river just east of the plant. There are small springs which feed the river and cool it down along this length of the river below the Russell dam.

Comment # V.C.7	Commenter: 27
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“But more importantly, EPA has completely accepted the perspective offered both by MA DEP and Russell Biomass in the FEIR and the DEIR on the characterization of the Westfield River. The state water quality regulations allow for the river to be segmented, essentially chopped up into pieces, and classified based on the water quality characteristics of each segment. The FEIR and the DEIR likewise reflect this overall classification scheme. The commentary included in the proponents documentation supplied to the state and presumably EPA further describe the impact on the coldwater fisheries in the river based on this segmentation process provided by the state.

The Council believes that the classification scheme provided for in the Massachusetts water quality regulations which allows a river to be segmented, and to disregard to actual evidence of the presence of coldwater fisheries, violates Massachusetts statutory, common and constitutional provisions. The Council also believes that this type of segmentation does not comply with the provisions of the Clean Water Act relating to protection of existing species and their habitat, particularly coldwater species. At the outset, EPA should not have accepted this classification structure for its analysis and determination of whether or not an NPDES permit is issued.

It is the Council’s belief that EPA needed to conduct its evaluation of the impact of the Russell Biomass proposal in regard to the entire Westfield, without relying on the segmentation standards provided by DEP. Secondly, the Council believes that Massachusetts Water Quality regulations require that the coldwater standard be applied when there are in fact coldwater species within the area designated by DEP as a warm water section.”

Response # V.C.2-7	Commenter’s: 02, 03, 16 and 27
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Massachusetts Surface Water Quality Standards at 314 CMR 4.02 define warm water fishery as “waters in which the maximum mean monthly temperature generally exceeds 68°F (20°C) during the summer months and are not capable of sustaining a year-round population of cold water stenothermal aquatic life.” This classification is not based on the presence or absence of cold water fish species, but the average summer temperatures and the ability of the waterbody to sustain all life stages of cold water fish (e.g., spawning, feeding, growth, etc.). According to MassDEP, this reach of the Westfield River is classified as a warm water fishery. In the description of the receiving water in the Fact Sheet (p. 5 -6), EPA stated that “the Westfield River is classified as a class B water body and a warm water fishery.” EPA recognizes that this language did not clearly state that the classification applies only to the segment that includes the proposed discharge (Segment MA 32-05), which extends from the confluence with the Middle Branch of the Westfield River to the Route 20 bridge in Westfield.

Regardless of classification, MassDEP provides for the protection of cold water species that may be present in warm water fishery waters. 314 CMR 4.05(3)(b)(2) states “when a reproducing cold water aquatic community exists at a naturally occurring higher temperature, the temperature necessary to protect the community shall not be exceeded and the natural daily and seasonal temperature fluctuations necessary to protect the community shall be maintained.” 314 CMR 4.06(1)(d)(7) further provides that

“Certain waters not designated as cold water in 314 CMR 4.00 may contain habitat that supports a cold water fish population, and, in such cases, the cold water fish population and habitat shall be protected and maintained as existing uses. The Massachusetts Division of Fisheries and Wildlife is responsible for identifying cold water fish populations that meet their protocol regardless of whether or not the water meets the cold water criteria in 314 CMR 4.00. Where a cold water fish population has been identified by the Division of Fisheries and Wildlife as meeting their protocol, but the water has not been documented to meet the cold water criteria in 314 CMR 4.00, the Department will protect the existing cold water fish population and its habitat as an existing use.”

The Fact Sheet at pages 5-6 and 24-27 clearly identifies the reach of the Westfield River in which the proposed facility is located as a cold water fishery resource (CWFR) by MassWildlife. EPA’s evaluation of the thermal impacts to the river due to discharge of heated effluent specifically considered protection of cold water species as an existing use *See* p.24-27 of Fact Sheet. The Fact Sheet identified the presence of several tributaries classified as cold water fisheries, the MassWildlife designation of this segment of the Westfield River as a cold water fishery resource, water quality standards that specify that cold water fisheries must be protected as an existing use where cold water fish populations are maintained, regardless of the designation, and specified that the temperature limit must be protective of the cold water fishery resource as an existing use. Thus, the Draft Permit and Fact Sheet clearly have considered the potential for thermal impacts on cold water fish habitat.

In fact, the expected rise in temperature based on the technology-based temperature limit of 85°F included in the Final Permit is more stringent than the rise in temperature based on water quality standards for either warm water fisheries (5°F) or cold water fisheries (3°F). *See* 314 CMR 4.05(3)(b)(2). At the upper lethal temperature for Atlantic salmon (81.5°F, Garside 1973), and at severe low flow (7Q10), the discharge is expected to increase the ambient temperature of the Westfield River approximately 0.04°F (Attachment B, Case 6). *See* RTC V.A.6-7 and IV.E.1-7. Even at the lowest recorded flow (13.2 cfs), the expected temperature increase at an ambient temperature of 81.5°F due to the effluent is 0.05°F (Attachment B, Case 7). At temperatures more protective of cold water fish (68°F), the anticipated rise in temperature due to the effluent is expected to be less than 0.3°F (Attachment B, Case 5) and at the highest temperature rise between influent and effluent (winter river temperature and maximum effluent temperature), the temperature rise in the river is expected to be less than 0.6°F (Attachment B, Case 3). Assuming a river temperature of 68°F (in compliance with the standards for cold water fisheries) and the maximum permitted discharge temperature, EPA estimates that the effluent flow from the facility would have to be greater than 3.4 cfs (2.2 MGD) to exceed the 3°F rise in temperature due to the discharge permitted by Massachusetts water quality standards for cold water fisheries (Attachment B, Case 8). The permitted maximum discharge volume is 0.206 cfs (0.133 MGD).

EPA believes the technology-based temperature limit in the Final Permit is protective of cold water species in the Westfield River. Thermal monitoring in compliance with the Thermal Plume Characterization Study (Part I.A.9 of the Final Permit) will confirm that the technology-based temperature limit is protective of the existing fishery resources in the Westfield River and that the narrative permit limits at Part I.A.7.e of the Final Permit (e.g., maintain zone of passage, protect spawning, residence, development, and feeding/growth) are met.

D. Mixing Zone

Comment # V.D.1	Commenter: 30
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“Mixing zone The Massachusetts implementation policy for mixing zones (1993) states that the mixing zone should be as small as is feasible, and that “Mixing zone size and shape will vary with hydrologic conditions. Mixing zone criteria apply at critical or worst case hydrologic conditions”. Failing this, fish and other aquatic organisms moving upstream or simply unlucky enough to be in the discharge zone are treated to an inescapable warm and toxic soup. This plant will discharge the same amount or perhaps even more cooling tower blowdown during low-flow/high temperature periods as it does when river flows and assimilative capacity are higher. However, having viewed photos of the river near the discharge zone taken during lowflow periods, I am not confident that the mixing zone will move with sufficient velocity and turbulence to dissipate heat and pollutants during worst case/low flow conditions. The following photo was taken by Henry Worchol on October 9, 2007 when summed flow at the three upstream gages was 35.1 cfs, still higher more than the 7Q10 value. These photos show a very stagnant situation where mixing can not be assured.

Further, I have little confidence in the modeling behind the mixing zone. The applicant used “FlowMaster”, a modeling tool intended primarily for pipes and artificial ditches with regular dimension. Quoting from the manual, it states

“Uniform Flow: The equations used in Bentley FlowMaster deal primarily with uniform flow. Uniform flow refers to a hydraulic condition in which the flow depth, channel discharge, and flow area do not change over a channel reach having constant section characteristics such as shape and material. These conditions are met only when the channel bottom slope and the friction slope are equal. When water is flowing under uniform flow conditions, the depth of flow is frequently called normal depth.

The river is not a uniform pipe or ditch, and to the extent that the mixing model is based on such oversimplified assumptions, it may misrepresent mixing zone dynamics. The outflow location for wastewater will be on the bank of the river, and potentially even above the level of the water during low-flow periods. Mixing zone regulations state that effluent flows along the banks of a river should be avoided if at all possible. How will such trailing flows be avoided, given the configuration of the outflows?

Further, the model relating flow rate to stream depth at the discharge point was calibrated with just one measurement on June 17th, 2005, when summed flow at the three upstream gages was 537 cfs. There were multiple days later in the year when flow was less than 50 cfs, but no data were collected to relate stream flow and depth.

There are many assumptions inherent in this mixing zone model, and much depends on getting the modeling right. After the plant is built is not the time to be trying to fix problems with dissipation of the waste stream. Why can not the applicant perform some tests at the proposed outflow location where water is pumped from immediately above the location, then labeled with a dye and re-discharged, so that the mixing zone dynamics can be directly observed? Given the magnitude of the project, this seems like a relatively inexpensive approach to avoiding costly problems later.”

Comment # V.D.2	Commenter: 03
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The heated effluent discharge from the Russell Biomass plant, which will reach a maximum of 85 degrees in the summer time, will create a thermal dead zone below the plant which will block the

migration of trout and salmon, both juvenile and adults, upstream and downstream of the plant. This area of the thermal effluent discharge is shown on **Exhibit 8** to Dr. Parasiewicz's Testimony as the "mixing zone."

Response # V.D.1-2	Commenter's: 03 and 30
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MassDEP's Implementation Policy for Mixing Zones defines mixing zone as "an area or volume of a waterbody in the immediate vicinity of a discharge where the initial dilution of the discharge occurs. Within a mixing zone excursions from certain water quality criteria may be tolerable, provided this does not interfere with the existing or designated uses of the segment." The Implementation Policy also describes initial dilution as "the process which results in the rapid and irreversible turbulent mixing of the wastewater with the receiving water around the point of discharge. Initial dilution is considered complete when the momentum induced velocity of the discharge ceases to produce significant mixing of the wastewater. For the special case of a submerged buoyant discharge, characteristic of most municipal and industrial wastes that are released from submarine outfalls, the momentum of the discharge and the initial buoyancy act together to produce turbulent mixing. Initial dilution in this case is completed when the diluting wastewater ceases to rise in the water column and first begins to spread horizontally. Effluents that meet water quality standards within the zone of initial dilution (ZID), provided they do not violate other mixing zone restrictions, are considered to be de minimus. Further justification of the size and shape is not necessary."

In this case, even at severe low flows ranging from the 7Q10 (19.4 cfs) to the lowest recorded flow (13.2 cfs), the effluent (0.206 cfs) comprises 1.1 to 1.6% of the ambient river flow. The effluent will rapidly mix with the receiving water at such high dilution that the ambient temperature of the receiving water is expected to increase less than 0.6°F at the point of discharge (Attachment B, Case 3) and designated and existing uses, including habitat for cold water fish, will be maintained. As such, no mixing zone is warranted or has been granted in the Final Permit.

EPA's calculations were based on the assumption of complete mixing in the receiving water. While complete mixing for temperature is not generally the most conservative assumption, in this case, because the volume of the receiving water flow is much greater than the effluent flow, EPA believes that the receiving water has sufficient velocity and turbulence to dissipate heat and ensure protection of aquatic life in the Westfield River. *See* RTC IV.E.1-7.

EPA specifically did not base effluent limits on the Permittee's mixing zone analysis provided with the permit application and the FEIR for many of the reasons the commenter suggests. Flowmaster software is primarily designed for uniform flow through pipes or weirs, although the calculated Manning's n of 0.48, which was used to develop parameters for the mixing zone model, is consistent with a natural riverbed of rocky gravel and boulders. The calibration was based on a single day of stream bed measurements, and the slope was calculated from FEMA maps. Because the receiving water is expected to be protective of existing uses (including cold water fisheries) within the zone of initial dilution (to be confirmed by the thermal plume characterization study) given the anticipated minimal increase in river temperature due to the effluent, no mixing zone was granted in the Final Permit.

Comment # V.D.3

Commenter: 27

“Thermal Pollution from Discharge Waters

In the Fact Sheet supporting the permit, there is absolutely no mention of the mixing zone for the discharge waters, or its structure, characteristics, and requirements. This lack of specificity in the analysis of the impact of the discharge water, through the thorough discussion of the mixing zone, is a violation of the EPA’s obligation to thoroughly assess the impact of the proposed plant on species for which the Westfield is EFH.

In a summary fashion, the Fact Sheet states that the 85 degree water which will be allowed under the permit to flow into the river will be dissipated effectively by the action of the river below the discharge point. The drawings and the narrative do not provide a precise location of that discharge point, which is relevant given what goes on at the river below the Indian River Hydro dam. In the FEIR and the DEIR, the proponents describe the location of the discharge pipe as 500 feet below the dam, on the east side of the river.

The mixing zone, or area where the heat from the discharge water is supposed to dissipate, is described by the proponents as a strong riffle running 500 feet below the outflow pipe, following the east shoreline of the river.

There are very clear regulations governing mixing zones and their size and shape. The mixing zone is to provide a zone of safety for migratory species, something acknowledged by Massachusetts Secretary of Energy and Environmental Affairs in his November 2007 comments to the DEIR. That zone of safety is supposed to amount to half the width of the river in the area of the mixing zone. Ostensibly, the zone of safety here would be the portion of the river on the west side of the median line of the river’s flow at any given time of the year.

In point of fact, after two site visits to the location in September and October 2008, the river and mixing zone location varies from the description provided by the proponents, and relied on by the state of Massachusetts in granting its permit allowing a withdrawal of water from the river. There is in fact a riffle 500 feet below the Indian River Hydro Dam. In fact, it does not run for 500 feet straight along the east shoreline. It runs for approximately 350 feet, and then the river makes a dramatic dog leg, of almost 90 degrees to the left.

At the point of the dog leg, the current tongue, rather than following the east shoreline, crosses the river and touches the west shoreline at a rocky outcrop approximately 350 feet below the point of the proposed pipe.

This flow structure then, has a dramatic impact on the zone of safety which the mixing zone is supposed to provide. It is factually inaccurate to say that there is a 500 foot long mixing zone, with a 500 foot safety zone from the hot water discharge impact. The most there can be is 350 feet. More significantly, the riffle as described does not serve to provide a safety zone because the flow actually crosses the river, rather than following the eastern shoreline straight downriver.

Any increase in water temperature cannot be confined to the eastern side of the river. Instead, it will form a curtain across the river, and not just at the point where the flow hits the far shore, but at some point above that.”

Response # V.D.3

Commenter: 27

The discharge location to the Westfield River is located at 42°11’11’’N and 72°51’05’’W. The Fact Sheet did not provide analysis of a mixing zone because no mixing zone was warranted or granted in the Permit. Based on conservative calculations at 7Q10 flow and at the lowest recorded flow, EPA determined that the effluent is not expected to adversely impact aquatic life in the Westfield River. Therefore, the Permittee must meet the conditions of the Final Permit at the point of discharge

(including maintaining a zone of passage and protecting a balanced, indigenous population), and the effluent should not cause a thermal barrier to upstream migration. The thermal plume characterization study will confirm that the ambient temperature meets the conditions of the Final Permit and is protective of existing uses, including cold water species that may be present in the reach, such as Atlantic salmon. An additional monitoring point on the west bank of the river at the dog leg is designed to confirm that there is no barrier to migration. *See* Part I.A.9.a.ii of Final Permit.

Comment # V.D.4	Commenter: 27
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“A further description of the mixing zone is necessary at this point. There is a discussion in the DEIR about the mixing zone, its impact on the river, and how it complies with the provisions of 314 CMR 4.00. Those limits include the fact that the mixing zone must be of the smallest area possible, and the mixing zone shall not interfere with the migration or free movement of fish or other aquatic life. The mixing zone shall not create nuisance conditions or accumulate pollutants in biota or sediment in toxic amounts. (FEIR at 35)

At page 208 of the DEIR, the proponents give a more detailed description of the mixing zone. They describe the cross-section of the river as an inverted pyramid. There are also various mathematical models to describe the functioning of the mixing zone. In an analysis at Table 115, the proponents state that on June 17, 2006, the average flow was 591 cfs, and the width of the river was 94.75 feet, with a maximum depth of 3.55 feet. These flow figures were arrived at using the three upstream gauging stations to come up with an estimated stream flow.

Note again, the proponents are using estimated flow data, and not data based on actual observations. The 7Q10 flow rate would be 32.4 cfs, and the width of the river at this flow would be 31.9 feet, or, basically, six or seven feet wider than the streets running through neighborhoods in suburban Boston. Half of that would be 15.95 feet. This would be the zone of safety at the average low flows modeled for the 7Q10. That means cold water species would have a safety zone through this entire 500 foot long mixing zone of only 16 feet. There is no analysis, and no data to show how the coldwater fisheries would actually move through this zone under those conditions. The maximum depth drops to 1.2 feet at the 7Q10 flow rate of 32.4 cfs. Again, there is no data and no analysis on the impact such low flows would have on coldwater fisheries. Certainly, the low flow would amplify any adverse impact on coldwater fisheries, and reduce the margin of safety that the mixing zone is supposed to provide. This description of the mixing zone at low flow periods is at odds with the general characterization of the zone by the proponents as a significant riffle. A more accurate characterization would be a shallow water flow, barely above a trickle.

Use of average flow data, just like average temperature data, is a flawed methodology, in terms of providing adequate protection for coldwater species, according to the October 2005 and October 2006 letters from Mr. French of MA F&W.

The DEIR goes on to look at the physical characteristics for the lowest historical flow of 20.7 cfs, showing the river at 27 feet wide, meaning the safety zone would be 13.5 feet wide. The depth of the river would be 1.01 feet.

There is no discussion in the EPA Fact Sheet of how long it would take the 110 gallons per minute of 85 degree water to dissipate within the mixing zone, and how far down the flow of the riffle it would take for the 85 degree water to equalize with the actual river temperature.

It is the position of the Council that at the low flows described above, namely 20.7 cfs, and a depth of 1.01, the riffle in fact would amount to a trickle. The hot water being poured into the river would extend down the riffle for some distance. Given the physical characteristics described above,

that hot water would not just flow straight down the eastern shoreline within the 13.5 feet of the mixing zone. It would cut across the river, following the flow of the current to the western shore.

The greatest fear of the Council is that flows under these conditions would in essence create a thermal barrier to all coldwater species, effectively blocking passage beyond the discharge point. This would be the death knell for the ability of Atlantic salmon to navigate successfully upstream and down, at precisely the time of year their need to do so is the greatest.

And that is what happens if we assume that the river flow will never get below the 20.7 cfs. Testimony has been provided in the record to the state DEP (particularly that of John Berry and other local residents, with life long experience observing the river flows) that flows in this section of the river get lower than 20.7 cfs.

It is the position of the Council that these facts demonstrate the proposed biomass plant and its hot water discharge, combined with its withdrawal of 885,000 gallons a day, creates an adverse impact on EFH. EPA must conduct the analysis required for adverse impact on EFH dictated by federal law and regulations.

If it does, the Council believes the correct conclusion will be that there can be no hot water discharge into the river for this plant. The Council believes the state of Massachusetts knows this to be the case. The Council believes that is why DEP has developed and applied a classification scheme which segments the river, describes the lower reaches as warm water fisheries, and disregards the presence of coldwater fish species. In so doing, it ignores its own regulations which would require the application of the coldwater standard to this reach of the river, given the fact that both trout and salmon have been found here.”

Response # V.D.4	Commenter: 27
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No description of a mixing zone was provided because the Final Permit does not grant the Permittee a mixing zone. The Permittee must meet the conditions of the Final Permit and ensure that existing uses are maintained at the point of discharge. EPA evaluated the potential impact of the thermal discharge using both average summer temperatures and maximum summer temperatures (73°F) near the lethal limit for Atlantic salmon (82°F) at both 7Q10 flow (19.4 cfs) and at the lowest recorded ambient flow (13.2 cfs), as well as winter river temperatures (see Attachment B). The low 7Q10 flow statistic is not an average in terms of mean annual flow as the commenter implies, but an annual minimum average 7-consecutive-day streamflow that occurs on average once every 10 years. The 7Q10 flow is commonly used to represent reasonably worst-case conditions when setting effluent limitations at a discharge (Technical Support Document for Water Quality-based Toxics Control, EPA 1991). Still, as a conservative measure EPA also evaluated impacts using the lowest single streamflow on record (13.2 cfs). The thermal plume characterization study will confirm that the Permittee meets the conditions of the Final Permit and will ensure that the existing uses are protected. One of the existing uses clearly identified on p. 5-6 and 24-25 of the Fact Sheet and in Part I.A.7.a of the Final Permit includes cold water species (trout, Atlantic salmon), and the cold water fishery resource designation provided to this reach of the Westfield River by MassWildlife, regardless of the fishery classification in 314 CMR 4.06. *See* RTC V.C.2-7.

Comment # V.D.5	Commenter: 03
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“Slide 12 – This photo shows the approximate area where the company will dump 85 degree water from discharge 001 – the water will flow out of the pipe onto rocks that will be heated up in the summer.

Slide 13: Another photo of river, looking up stream, between the biomass plant and the “dog leg” shows will discharge over the riffle, onto heated rocks.”

Comment # V.D.6	Commenter: 03
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“Slide 14 – There is no “safe zone for fish”: the company says discharge will only flow out ½ way into river and then will head straight down stream, that the discharge plume will not cross over an imaginary line that runs down the middle of the River and therefore fish swimming up and down stream will have a “safe zone of passage” and can avoid the discharge plume. In fact, as shown by the field test I’m going to describe the discharge creates a heated and polluted barrier across the width of the River.

Slide 15- shows the location of the dog leg, where the River bends.

Slide 16 – The flow transects the river from East to West from discharge point 001 and downstream.

This is demonstrated by a field experiment I participated in. On October 4, 2008, I accompanied a team of experienced Trout Unlimited members who studied the flow at and down stream of discharge 001. [This included John Berry of Streamside Flyfishing and Peter Schilling, Esq. of Trout Unlimited] These fisherman staked out the location of the discharge pipe at 001 on the east bank of the river. I watched them drop several bobbers into the river at discharge location 001. I was standing on a rock on the WEST bank of the river, about 350 feet down stream of 001, as shown in this photograph. The bobbers I saw them put in the water at the location of discharge 001 did not just flow down stream in the so called “safe zone”– the bobbers transected the river on the flow, and came over to the west side of the river where I was standing, and entered an eddy in front the rock I was on. This video shows the water flowing from the east side at the site of the discharge pipe 001, and going directly across the river to where I was standing. The rock I was standing on is about 350 feet downstream of discharge location 001. Slide 17- video of the water flowing across the river.

Slide 18 Slide Mixing Zone = Killing Zone - Law allows this killing zone but says it has to be as small as feasible: permit does not define the area.”

Response # V.D.5-6	Commenter: 03
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EPA does not dispute that at the turn in the river, located approximately 450 feet downstream of the proposed discharge location, the predominant stream flow will cross the river, as demonstrated by the experiment with the fishing bobbers. However, heat is not a discrete unit like a bobber. As heat enters the river, it mixes with cooler, ambient river flow that is, even under worst-case low flow conditions, flowing over 60 times faster than the discharge. The ambient river water and the discharge flow continue to mix as the effluent moves downstream, aided by the turbulent flow over the rocks. EPA demonstrated on page 24-27 of the Fact Sheet and elsewhere in the Response to Comments (reference above) that the flow from the plant is sufficiently mixed at the point of discharge so that it is not expected to result in measurable increases in ambient river temperature. The Final Permit requires that conditions be met at the point of discharge, including that the effluent will not create a thermal barrier for migrating fish as specified in Part I.A.7.e.

E. Thermal Impacts

Comment # V.E.1	Commenter: 08
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“If anybody believes that the hot water they're going to dump from this plant is going to help the fish population, then they believe in the tooth fairy, too.”

Comment # V.E.2

Commenter: 09

“The amounts of heated water and chemicals go back into the river is another concern. First of all, this is a recreational area, as stated. Don't take that away from us. And putting heated water back will definitely alter the aquatic life that's there and its ecosystem. When you're putting back 85-degree water, it has no choice but to alter it.

In the winter, that's going to be another issue, because it's going to -- like they said, going over rocks, the rocks may maintain that heat and that's not going to be healthy. It's going to change everything that's going on there. (how does 85° in the winter not alter this ecosystem - water ways never reach that temperature and if it does at its surface, it is for a very short time) Fish, if you're in the EPA, you know fish cannot handle extreme changes, whether it's temperature, pH or dissolved oxygen levels. It can't happen. And heated water obviously will have less dissolved oxygen. Granted, when it's in a more shallow area, some of the air mixes in and makes it a little bit different, but you can't guarantee what is going to happen.”

Comment # V.E.3

Commenter: 13

“5. Temperature pollution should not be allowed to the Westfield River. This river has severe low flow episodes, especially during the summer when water use by the incinerator would be the greatest, discharges would be the warmest, and natural stream temperatures would be the highest. Any increase over the ambient upstream temperatures would have a negative impact on the cold water fishery, the stream ecology, and especially the microbial ecology of disease causing organisms. As previously stated, a Zero Liquid Discharge System would alleviate this pollution source. No increase in temperature shall be allowed.”

Comment # V.E.4

Commenter: 34

“...I care deeply about the health of our rivers and wildlife. The health of the Westfield River cannot be disconnected from the larger ecosystem. Dumping warm, polluted water, after evaporating 85 percent of the river water used for cooling cannot be good for the Westfield River and the wildlife that rely on this flow, especially Atlantic salmon.”

Comment # V.E.5

Commenter: 03

“An increase in the water temperature and reduction of volume by over 650,000 gallons per day through evaporation at this portion of the Westfield River and the addition of pollutants has the potential to hurt the fish populations. I am concerned that these types of changes to the River will cause significant damage that can never be reversed.”

Comment # V.E.6

Commenter: 26

“With storm water and waste water from this site being discharged back into the Westfield River, how will it affect water quality and river temperature?”

Response # V.E.1-6

Commenter's: 03, 08, 09, 13, 26 and 34

As stated on pages 25-27 of the Fact Sheet and elsewhere in this Response to Comments (RTC V.A.6-7, V.C.2-7, IV.E.1-7), EPA believes that the heated discharge from the facility will not raise the ambient temperature of the Westfield River more than 0.6°F (Attachment B, Case 3). The worst-case conditions in Attachment B, Case 3 are unlikely to occur because in the winter the facility will likely be discharging at less than 85°F due to low ambient air temperatures (the Permittee estimates

discharge temperatures at 68°F), and river flows will likely be higher than 7Q10. Under severe low flow conditions (7Q10 low flow and ambient temperatures at upper lethal temperatures for Atlantic salmon), the effluent is expected to increase the ambient temperature less than 0.03°F (Attachment B, Case 6) (*See* RTC V.A.6-7 and V.C.2-6). This temperature increase is less than the sensitivity of a typical temperature monitor (0.5°F). At ambient temperature of 82°F and at the lowest recorded flow (13.2 cfs), the effluent is still not expected to increase the ambient temperature by more than 0.04°F (Attachment B, Case 4). The effluent should not degrade ambient conditions because even though the discharge temperature is higher than summer ambient temperatures in the river, the flow represents a small portion of the overall flow in the river, even at severe low flow conditions (e.g., discharge flow of 0.206 cfs is 1.1% of 7Q10 flow adjusted for plant water withdrawal). The flow of the river even under extreme low flow should provide sufficient mixing such that impacts from the minimal addition of heat should not impair designated or existing uses, including cold water fisheries.

VI. Other Permit Monitoring Requirements and Effluent Limits

A. Chemical Usage and Discharge

Comment # VI.A.1	Commenter: 31
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“The total residual chlorine limit is “no detectable amount.” This limit is quite rigorous, and the free available chlorine limit is also quite low. We support these limits in the draft permit.”

Response # VI.A.1	Commenter: 31
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EPA agrees with this comment. EPA’s determination regarding this issue is discussed further in the Fact Sheet on pages 15 through 18.

Comment # VI.A.2	Commenter: 31
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“Part I.A.6(c) of the permit only allows one biocide, chlorine, but it would be great for the permit to not allow any toxic or potentially toxic additions without EPA/DEP approval and review through a public notice process.”

Response # VI.A.2	Commenter: 31
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It would be impractical for EPA to try to identify and limit every chemical that a permittee may use throughout the life of the permit. It is equally impractical to modify every permit whenever new water or wastewater treatment chemicals are substituted. With that said, EPA is concerned about the use of new, unapproved chemicals and includes permit provisions to deal with these instances. In this case, Part I.A.6 of the Russell Biomass Permit requires the Permittee to propose and receive approval from EPA and MassDEP to perform feasibility studies for any new chemicals, including other biocides not currently approved for water discharge. Among other parameters, Whole Effluent Toxicity testing may be required as part of feasibility studies in order to take into account the interaction of these chemicals with each other, i.e., cumulative or synergistic effects. Furthermore, the Permittee may only use/discharge the proposed chemicals after receiving written approval from EPA.

Comment # VI.A.3	Commenter: 31
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“The fact sheet at page 12 explains the need to continually discharge suspended and dissolved solids from the cooling system. If there is a clarifying system for the intake water, why would there be such a significant amount of solids in the cooling tower? Might there be a way to improve clarification in order to reduce cooling tower releases? The fact sheet indicates there will always be some outside inputs of solids, such as pollen, but during much of the year one would imagine pollen would not be floating about in the air in great quantities. Perhaps ash and saw dust and materials related to the biomass burning process are actually the more likely outside input of solids, and if so, has the permit established enough limits and testing to be protective of the river?”

Response# VI.A.3	Commenter: 31
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The mechanical draft cooling tower proposed by RB uses the principle of evaporation to cool the heated water coming from the facility’s condenser. (*See* response VIII.F1-2 for a more complete description) Dissolved solids are left behind in the evaporation process. Therefore, evaporation in cooling towers cause dissolved solids to concentrate in the circulating cooling water. The incoming

river water treatment system does not effectively remove all river water impurities. Furthermore, the boiler blowdown, which contains water treatment chemicals, is also directed to and mixed with the cooling tower water. These concentrated materials in the cooling tower will begin to precipitate out of solution and cause fouling of the condenser tubes and tower fill material, thereby affecting its heat transfer efficiency. Therefore, blow down flow from the cooling tower is needed to remove the accumulated solids. Russell Biomass also has proposed to install an in-line filtering system to further reduce the amount of blow down required. EPA determined that the facility minimized the blow down volume to an appropriate amount.

The Fact Sheet at page 12 indicates that “additional foreign materials such as pollen are also scrubbed from the ambient air that is drawn through the tower in the cooling process.” EPA did not intend to characterize the inputs from the outside air as containing pollen year round. Ash, saw dust and materials related to the biomass burning process are not more likely to be sources of solids in the cooling tower. Any dust from the wood piles is required to be controlled, as indicated on page 9 of the December 30, 2008 MassDEP Conditional Approval letter (i.e., Air Permit) for the proposed facility. There should be no airborne particulates generated from bottom ash management as it will always be handled wet. Fly ash will be collected using enclosed dry chain conveyors [from baghouse (for BFB boiler) or from cyclone with an electrostatic precipitator (for stoker boiler)] and stored within an enclosed storage bin prior to being removed for off-site disposal. Furthermore, ash will be transferred to trucks or containers in a dedicated, enclosed storage area. The wood piles will be located on the north side of the site while the cooling towers will be located on the south side; with buildings and equipment sitting in between the two. Therefore, sawdust is not expected to be present near the tower. Furthermore, the particulate emission limits of the facility’s Air Permit are sufficiently low and not expected in the air within the vicinity of the tower.

Comment # VI.A.4	Commenter: 12
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“Page 3 of 15: Paragraph 1. c. This sampling frequency requirement for "free available chlorine" should be modified to require discharges to be stopped if detectable levels of free available chlorine are found in the initial sample. Should detectable levels occur in the initial sample, the discharge flow should immediately be diverted to a storage tank to be disposed of off-site as a hazardous liquid waste. Discharges into the Westfield River should not be resumed until the source of free available chlorine is identified and corrective action taken to eliminate it from the discharge.”

Response# VI.A.4	Commenter: 12
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Chlorine, in the form of sodium hypochlorite, will be added to the cooling tower as a disinfectant and biocide to remove biological film on the surface of the tower fill material and condenser tubes. This film reduces the heat transfer efficiency and therefore the efficiency of the plant itself. As explained in the Fact Sheet, page 17, “Russell Biomass will disinfect the cooling tower system by “shocking” the system with chlorine. Each night, the discharge valve will be closed and sodium hypochlorite (chlorine) will be added. The cooling system will be allowed to recirculate for approximately two to four hours until periodic testing determines that the free available chlorine concentration is either below detection or **within permit limits**. If blowdown (*i.e.*, discharging) must resume before free available chlorine levels are below **detectable** amounts, Russell Biomass must also demonstrate that there is no detectable amount of total residual chlorine (TRC) **within two hours of initiating blowdown**. This requirement is consistent with the Steam Electric ELGs by prohibiting the discharge of free available chlorine or total residual chlorine (TRC) from any unit for more that two

hours in any one day. *See* 40 C.F.R. §§ 423.13(d)(2) and 423.15(j)(2). EPA concludes that the facility will be able to meet the proposed limits and, in fact, EPA expects that the facility will commonly have no detectable free available chlorine in its discharge given the treatment approach described above.” (emphasis added)

Comment # VI.A.5	Commenter: 12
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“Paragraph 1. e. The Permittee should be required to certify more frequently, on a quarterly or monthly basis, not just annually, that no new chemicals or waste streams have been added.”

Response # VI.A.5	Commenter: 12
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EPA disagrees that more frequent certification is required. In fact, this requirement could be considered redundant because EPA will be made aware of any potentially new chemicals through the requirements of Part I.A.6 of the permit. Part I.A.6 requires the Permittee to propose and receive approval from EPA and MassDEP to perform feasibility studies for any new chemicals not currently approved for water discharge. Furthermore, the Permittee may only use/discharge the proposed chemicals after receiving written approval from EPA. Furthermore, the Permittee is not authorized to discharge waste streams that are not expressly specified in the Final Permit and in doing so the Permittee would be subject to enforcement action.

Comment # VI.A.6	Commenter: 12
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“Page 9 of 15: Paragraph 6. a. The text as written appears to allow the discharge of "new chemicals not currently approved for water discharge" as part of a feasibility study. This implication results from the requirement to report "the impact if any, on the indigenous populations of the receiving water." This should be clarified to make clear that no study may involve actual discharges into the River.”

Response# VI.A.6	Commenter: 12
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Part I.A.6.a of the Draft Permit states that “[t]he Permittee may discharge chemicals not currently approved by this Permit **only after receiving written approval from EPA.**” (emphasis added) With this said, EPA will add the following language to this provision of the Final Permit to remove any ambiguity:

“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. *No study may involve actual discharges of the proposed new chemicals into the Westfield River.* 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....”

Comment # VI.A.7	Commenter: 12
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“Page 13 of 15: Paragraph 11. c. This paragraph addresses discharges of "waste water pollutants from fly ash wash or fly ash transport waters." Ash generated from combustion of wood grown in New England is likely to have high radioactivity content. Radioactive substances should be specifically included within the phrase "waste water pollutants." Further, provision should be made for monitoring radioactivity of waste ash and also potentially radioactive soot emitted from the plant's

chimney to assure that soot is not being deposited on the surface of the Westfield River or any other navigable waters.”

Response# VI.A.7	Commenter: 12
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Part I.A.11.c of the permit states that “[t]here shall be no discharge of waste water pollutants from fly ash wash or fly ash transport waters.” This language was extracted from the Steam Electric ELGs at 40 C.F.R. § 423.15(g), which prohibits the discharge of wastewater pollutants from fly ash transport water. EPA determined on a best professional judgment (BPJ) basis that this technology-based limit should be included in the Draft Permit. Page 11 of the Fact Sheet explains that “[f]ly ash will be collected in an enclosed storage bin. All ash that passes a beneficial use determination will be used as a liming agent and soil amendment for land applications such as agricultural and forests. Otherwise, the ash will be disposed of in a landfill.” EPA will change the language in the Final Permit to clarify that the requirement simply prohibits the discharge of any fly ash containing wastewater to the river. Part I.A.11.c the Final Permit now reads: “[t]here shall be no discharge of ~~waste water pollutants from~~ fly ash wash or fly ash transport waters.”

EPA did find some evidence that there are higher levels of man-made radioactive isotopes in wood ash samples from New England trees compared to those from other parts of the United States.¹ Presumably, this is due to the trees’ uptake of radioactive deposition from global nuclear weapons testing fallout. However, EPA has not identified any situations in which any radioactive materials in fly ash pose a threat to receiving water ecosystems via deposition at that site. Moreover, EPA has not discovered any information that shows that this source of radiation poses any more health concerns than what is considered background exposure to naturally occurring radioactive material.² Also see RTC VI.A.8 below.

Comment # VI.A.8	Commenter: 12
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“Paragraph 11. d. High winds due to storms or other normal weather events may blow sawdust or waste ash into the Westfield River. Soot from the plant's chimney may also drift down onto the surface of the river. The Permittee should be required to establish a reporting system to receive reports of sawdust, ash, or soot on the river made by local residents or other observers. The Permittee should be required to report to EPA all instances of such debris on the river on a monthly basis”

Response # VI.A.8	Commenter: 12
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Particulate air emissions such as air borne sawdust, ash, or chimney soot that drifts down onto the surface of the river would be addressed through the state’s air pollution control permitting process and is outside the scope of this NPDES permitting action. The NPDES program authorized by the Clean Water Act regulates the point source discharges of pollutants to surface waters and the intake of cooling water. With regard to any direct discharges from the facility, Part I.A.11.d of the permit prohibits wood chips, sawdust, waste ash, and other wood related debris from entering the Westfield River from the Russell Biomass facility or any associated runoff area. Any instance of such debris in

¹ Undated letter from Stewart Farber, Farber Medical Solutions, LLC to the Greenfield Zoning Board of Appeals. See http://www.greenfieldbiomass.info/uploads/Letter_Woodash_issue_061509.doc

² Re: fireplace ash - Implications to environmental decisions and priorities, Wed, October 7, 2009 - 2:38 PM. See <http://greenthumbs.tribe.net/thread/f501bf13-6284-4c7a-9fdb-3084154bce08#ace389b1-0fe1-4ed7-920e-31e246b61158> (presumably from Stewart A. Farber)

and on the river constitutes a violation of the Clean Water Act (CWA), which must be reported to EPA and is subject to enforcement action. *See* Part II.3 of the permit.

Comment # VI.A. 9	Commenter: 06
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“River Sampling and Analysis. Regardless of other permit conditions, water samples should be collected more frequently for analysis for the full array of constituents that could potentially enter the river from the incinerator either intentionally or accidentally. Testing should include upstream locations, for concurrent testing by the same methodology as other samples, so that potential impacts from the incinerator operation can be discerned against background. The project owner should fund a stewardship account that the river steward can use to collect and analyze its own samples to compare to Russell Biomass’ analytical results.”

Response # VI.A. 9	Commenter: 06
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Monitoring frequency is determined on a case-by-case basis. According to the NPDES Permit Writers’ Manual, the intent is to establish a frequency of monitoring that will detect most events of noncompliance without requiring needless or burdensome monitoring (page 119). In establishing monitoring frequency, the permit writer estimates the variability of the concentration of the parameter by reviewing effluent data for the facility, or in the absence of such data, by reviewing data from similar dischargers. “A highly variable discharge should require more frequent monitoring than a discharge that is relatively consistent over time (particularly in terms of flow and pollutant concentration).”³ In the case of this permit, temperature and pH data will be collected continuously and chlorine data will be collected on a daily basis. Other parameters are required to be monitored monthly, quarterly, or annually. The monitoring frequencies required in the permit were chosen to obtain enough data to develop a characterization of each outfall, while at the same time not requiring overly burdensome monitoring requirements.

Further, in response to comments on phosphorus, turbidity and aluminum, the Final Permit requires upstream (ambient) testing for these parameters to evaluate potential impacts against background. The limits and conditions of the Final Permit are unique to the Permittee. In general, NPDES permits provide two levels of control: technology-based limits (based on the ability of dischargers in the same industrial category to treat wastewater) and water quality-based limits (if technology-based limits are not sufficient to provide protection of the water body). Therefore, obtaining background or ambient information is unnecessary because a permit’s effluent limits satisfy these two levels of control. Even so, the Russell Biomass Final Permit does require sampling of the ambient water. *See* responses VI.B, VI.D, and VI.G.5 regarding phosphorous, aluminum and turbidity sampling, respectively.

EPA agrees that it might be beneficial for the project owner to fund a river stewardship program; however, it is beyond the scope of the NPDES program for EPA to require such a program. Additionally, there is no barrier restricting citizens and/or watershed groups from conducting their own in-stream monitoring.

³ U.S. EPA NPDES Permit Writers’ Manual, September 2010, EPA-833-K-10-001, page 8-5.

Comment # VI.A.10	Commenter: 06
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“**Floor Drains.** There should be no discharges from floor drains to the river because of hazardous constituents that could be used in the incinerator. Floor drains should be tied into the WWTP.”

Response # VI.A.10	Commenter: 06
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Floor drains will be tied to the facility’s treatment plant. Wastewater from floor drains will first be treated within an oil/water separator prior to additional treatment in the process wastewater collection and neutralization system (outfall 001). *See* page 12 of the Fact Sheet. The Steam Electric ELG’s consider floor drain waste as low volume wastewater and requires this waste stream be limited for total suspended solids and oil and grease. *See* 40 C.F.R. §§ 423.12(b)(3) and (4) and §§ 423.15(c) and (f). Although RB is not subject to the Steam Electric Effluent Guidelines, as discussed in detail in the Fact Sheet, EPA concluded on a BPJ basis that the BAT (and NSPS) limits from the ELGs are appropriate to apply to the Russell Biomass facility. *See* page 37 of the Fact Sheet.

Comment # VI.A.11	Commenter: 33
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“To permit effluent discharge from Russell Biomass can not be good for fish and wildlife of the Westfield. Evaporating 85% of the 885,000 or more gallons a day from the Westfield will mean that 15% of the remaining effluent water will have 666% greater concentration of the river’s pollutants, minerals and chemicals. And effluent water will likely pick up toxins in particular aluminum inside Russell Biomass.”

Response # VI.A.11	Commenter: 33
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Incoming river water will be treated to remove much of the river’s minerals and particulates prior to use in the boiler and cooling tower. Russell Biomass is also intending to continuously filter cooling tower water to remove solids, thereby further reducing the amount of blowdown needed for the towers to operate efficiently. Russell Biomass is expected to meet all permitted limitations including no detectable levels of the specified 126 priority pollutants. In addition, there will be no use of aluminum containing water or wastewater treatment chemicals as stated on pages 36-37 of the Fact Sheet and as a permit requirement (Part I.A.6.b). Moreover, there is no source of aluminum in the design of the building or cooling system, which could contaminate the discharge (personal communication between Doris Atkinson, Tighe & Bond and Sharon DeMeo, EPA on August 7, 2009). Finally, Parts I.A.1.f and I.A.1.g of the Final Permit require Russell Biomass to collect upstream, downstream, and plant discharge aluminum data and submit a study to EPA on the levels of aluminum in the Westfield River.

Comment # VI.A.12	Commenter: 06
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“The lack of any limits on certain pollutants in the draft permit (“report” only) is toothless and meaningless. (If discharge was to be allowed, and it should not be allowed, limits would be needed on all relevant constituents and parameters.)”

Response # VI.A.12	Commenter: 06
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Specific permit “effluent limits” are established when the permitting authority (EPA in this case) determines that a particular pollutant has the reasonable potential to cause or contribute to an in-stream excursion above a water quality criterion or when limits are required pursuant to effluent limitation guidelines. *See* 40 C.F.R. §§ 122.44(a) and (d). In this permit, EPA has established

effluent limitations in each case that one or both of these conditions are present for the facility's discharges, as explained in detail in the Fact Sheet.

Additionally, in this permit, EPA is including permit provisions to gather additional information regarding the constituents and/or concentrations of the proposed discharge. This information will facilitate permit renewal in five years from the date of this final permit issuance, when the need for additional effluent limits will be evaluated.

B. Phosphorus, Oil & Grease and Total Suspended Solids

Comment # VI.B.1	Commenter: 31
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"There is some indication that nutrients may be a problem further upstream than the Fact Sheet describes. Please see the attached photo of a weed-choked river bed one-half mile downstream from Russell Biomass, taken by Henry Warchol, a member of CRWC and the Westfield River Watershed Association. Additionally, page B30 of the 2001 Westfield River Water Quality Assessment described the segment of the Westfield River (site WR05) 250 meters downstream from Strathmore Paper Company discharge (inactive) in Russell, MA "slightly impacted" for biota compared to reference station (WR01), and 100% comparable to reference station (WR01) for habitat. The report also says, "Current impacts to the macroinvertebrate community appear related to water quality factors associated with organic enrichment. Upstream impoundments, urban runoff, and treated wastewater (Russell WWTP), may provide the organic inputs that support the filter-feeder dominated benthos assemblage found at WR05.

Macroinvertebrate biomonitoring is recommended here during the next DEP Westfield River watershed survey in 2006. Fish population sampling, using multiple crews (i.e., two backpack electrofishers) or a barge-mounted electrofishing unit due to the wide nature of the WR05 reach, should accompany the macroinvertebrate sampling effort. In addition, water quality monitoring may help to determine the type(s) of water quality degradation present here." Because the 2006 water quality report is not published yet, we do not know if this recommended sampling was done or what the results were. However, CRWC feels that the organic enrichment described here indicates a weakness in EPA's argument that the nutrient impairment in this river segment lies mainly in the vicinity of the Westfield WWTP. See report online at <http://www.mass.gov/dep/water/resources/32wqarap.pdf>."

Comment # VI.B.2	Commenter: 03
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"Photo #4 [Exhibit D] and photo #5 [Exhibit E] show algae in the river alongside and below the fish ladder. It is a known scientific fact that algae increases from nutrients and higher water temperature, and that diminishment of the dilution factor by taking more water from the River can exacerbate this problem.

Based upon my detailed observations over the years, the algae situation in the Westfield River is getting worse. Photo #6 [Exhibit F] and photo #7 [Exhibit G] are later photographs depicting algae growth not seen in prior years."

Response # VI.B.1-2	Commenter's: 03 and 31
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The most recent Westfield River Watershed Water Quality Assessment Report (2001) specified that the lower 1.0 mile reach of the Westfield River Segment 32-05 was impaired for aquatic life and

aesthetics. According to MassDEP, the upper 16.8 miles of this reach, which includes the proposed Russell Biomass site, supported aquatic life and aesthetic designated uses. In contrast, in its assessment of the portion of the segment downstream of the Westfield Water Pollution Control Plant (WPCP), MassDEP makes four observations about water quality and impairments: (1) the macroinvertebrate community is slightly impaired compared to the reference station (at Huntington), (2) the shift in community composition in the downstream site was to more pollution tolerant taxa, (3) chronic and acute whole effluent toxicity was detected in the WPCP effluent, and (4) there was more green filamentous algae in the lower 1.0 mile of this segment. Based on these observations, MassDEP concluded that segment MA32-05 warranted designation as impaired for both aquatic life and aesthetics. In the Fact Sheet, EPA interpreted this assessment to indicate that the impairments listed in MassDEP's Final 2008 and Proposed 2010 Integrated List of Waters (303(d) List) were limited to the downstream 1.0 mile near the Westfield WPCP and that a minimal addition of phosphorus to the receiving water from the proposed facility (a daily maximum of 0.407 pounds per day) would not cause or contribute to nuisance algal growth.

Since the issuance of the Draft Permit, EPA has reviewed the Rapid Bioassessment Protocol (RBP) analysis from the 2001 Assessment and has received additional evidence and comments that suggest that nuisance algal growth may not be limited to downstream of the Westfield WPCP and may in fact occur farther upstream during certain periods of low flow. Some of the submitted pictures (notably the picture referenced in Comment VI.B.1 taken 250 meters downstream from the Woronoco dam) illustrate visible algal blooms well upstream of the Westfield WPCP. Excessive algal growth was particularly prominent approximately one-half mile downstream of the proposed discharge location during severe low flows in September 2010.

In addition, the RBP analysis for the sampling location downstream from the Woronoco Dam (WR05) indicated slight impairment compared to the reference station, and attributed the changes in community composition to water quality factors associated with organic enrichment. In particular, low taxa richness (a metric of the number of taxa present) and EPT index (a count of the most pollution-sensitive aquatic insect orders) contributed to a lower overall metric score for this location compared to the reference site. A preponderance of filter feeding caddisflies, which contributes to displacement of more sensitive taxa, may have been encouraged by an ample supply of fine particulate organic matter. Downstream of an impoundment, such as at site WR05 and the proposed Russell Biomass discharge location, the concentration of fine particulate organic matter can be influenced by the change in flow and may result in increased abundance of hydropsychid caddisflies. At WR05, there was an increase in *Hydropsyche morona* abundance (20 individuals) compared to the reference station (9 individuals). In general, this site had a higher percentage of filtering-collectors and lower percentage of gathering-collectors than the other sampling locations in this segment of the Westfield River.

Overall the habitat condition and water quality in Westfield River Segment 32-05 is very good and supports a diverse and balanced riverine community. However, the RBP analysis and other supporting evidence suggest that nutrient-related impacts (e.g., noxious aquatic plants) may be periodically observed farther upstream than was originally indicated in the Fact Sheet.

Comment # VI.B.3	Commenter: 08
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"If you're gonna dump not only hot water, but phosphates with it..."

Comment # VI.B.4

Commenter: 30

“As the permit factsheet acknowledges, the Westfield River is clearly impaired in its downstream reach, probably because of excess nutrients. Further, phosphorus from the plant’s discharge will represent a significant increase over measured in-stream concentrations, which already exceed EPA’s benchmark for Ecoregion VII of 0.01 mg/L. The extent to which the plant’s wastewater will contribute to phosphorus loading in the river is still unknown, to a large extent because phosphorus concentrations in the Westfield River are very poorly characterized. At this point the acceptable data for evaluating phosphorus concentrations appears to consist of a very few samples collected in 2001, eight years ago. None of the samples have been collected at conditions approximating the 7Q10 flow. Since phosphorus tends to be derived from point sources, it is reasonable to assume that its concentration will increase as flows decrease. The lack of representative data is therefore troubling. How hard would it have been for additional water quality and temperature data to have been collected over the last several years that this plant has been in the works? Why has DEP not required that the proponent collect such data? By only regulating phosphorus discharges resulting from direct additions of P to boiler water, and not the phosphorus already present in river water that is concentrated in the cooling process, the permit itself unfortunately appears to ignore potential phosphorus loading by the plant. In a permit that exhibits such concern for details of the plant’s operation, I respectfully submit that it is disappointing that the permit grants “intake credits” for such phosphorus, as is stated in the factsheet. Almost all the phosphorus that is removed with river water and concentrated in the cooling process is no less a “new addition” of nutrients than phosphorus that has been deliberately added, since the river’s dilution capacity has been reduced by 85% concomitant with the net removal of cooling water in the first place. Documents submitted by the applicant have indicated that the actual concentration of phosphorus in wastewater will be 1.0 – 1.5 mg/L, and the permitting documents should reflect this fact.”

Comment # VI.B.5

Commenter: 05

“I understand at that point pollution does exist, but adding to that, the wastewater treatment plants also discharge phosphates and nitrates at quite a rate. This is where the algae comes from.”

Comment # VI.B.6

Commenter: 03

“Slide 7, 8 Shows the Westfield River in Oct 2005 and Oct 2007 – good time for flyfishing, boating. These photos show more slime and algae, and low flow. The state agency DEP says the taste, color, and odor of the water are impaired, and there are noxious aquatic plants and turbidity.”

Response # VI.B.3-6

Commenter’s: 03, 05, 08 and 30

The MA32-05 segment of the Westfield River including the proposed site of Russell Biomass is listed in the 303(d) List as impaired for noxious aquatic plants, turbidity, taste, odor and color, not excess nutrients. Still, EPA considers these parameters, particularly noxious aquatic plants, to be closely associated with organic enrichment and cultural eutrophication. Response VI.B.1-2 recognizes that the impairments that were identified as limited to the lower 1.0 mile of this reach in the Fact Sheet may, in fact, be present during some periods (e.g., severe low flow) upstream from the Westfield WPCP closer to the proposed discharge location.

Ecoregional nutrient criteria are developed to represent surface waters that are minimally impacted by human activities and thus protect against the adverse effects of nutrient overenrichment from cultural

eutrophication. The ecoregional value referenced in Comment VI.B.4 (0.01 mg/l) is based on the median value of the 25th percentile of all seasons' Ecoregion VIII data from 1990 to 2000 (37,680 records in total). As such, it represents a long-term annual value over a wide range of flow regimes from spring flood to summer low flows, and is not representative of conditions at extreme low flow (i.e., 7Q10 flow). EPA has not used this value for compliance purposes in NPDES permits to date.

MassDEP measured instream phosphorus concentrations in late summer of 2001 and 2006. In 2001, sampling was conducted during a drought period characterized by lower flows, albeit not as low as 7Q10 levels. During the sampling periods, phosphorus concentrations tended to range from 0.006 to 0.015 mg/l, with the exception of samples taken on single dates in September 2001, May 2006, and October 2006.

During the NPDES permit development process, the Permittee re-evaluated the amount of phosphorus needed for the boiler from the permit application and Final EIS. As indicated in the Fact Sheet, the Permittee determined that 0.407 pound per day was the minimum amount of phosphorus needed for corrosion control, which was more stringent than the concentrations of 1.0-1.5 mg/l reflected in earlier documents.

EPA recognizes that the technology-based maximum daily limit of 0.407 pounds per day of phosphorus from the boiler allowed in the Draft Permit would add to the existing phosphorus load in the river. After receiving comments and reviewing the available information, EPA has determined that because the impairments related to nutrient enrichment (e.g., noxious aquatic plants) may not be limited to the downstream 1.0 mile (near the Westfield WPCP) as indicated in the Fact Sheet, the additional phosphorus load from the proposed discharge may cause or contribute to excess algal growth during some periods of the year, such as during extreme low flow conditions like those observed in September 2010. Therefore, the Final Permit has changed to measure, report and prohibit the Permittee from increasing the phosphorus load from intake to discharge. By holding the phosphorus load constant, the effluent will not add to existing phosphorus load in the river and will not contribute to algal growth downstream of the discharge. Specifically, Part I.A.1.footnote 7 requires that "[t]here shall be no detectable increase in the monthly average mass-based phosphorus load (reported as pounds per day) between the influent (measured at the intake) and discharge (measured at Outfall 001)."

The Final permit requires the Permittee to report both concentration and load values for each monthly monitoring event for phosphorus. A monthly limit is appropriate because phosphorus enrichment is considered a chronic water quality problem rather than an acute water quality problem. Further, the Final Permit requires flow monitoring and reporting at the intake to facilitate load calculations.

Since the Final Permit's water quality-based limit for phosphorous at Outfall 001 is more stringent than the technology-based Draft Permit limit for phosphorous at internal Outfall 003 (0.407 pounds per day), the technology-based limit has been removed from the table in Part I.A.3 of the Final Permit.

Because the operation of the cooling towers will recycle water through the facility, thereby dramatically reducing the volume of cooling water withdrawn, any phosphorus in the influent after raw water treatment will be concentrated in the cooling tower blowdown. The concentration of

phosphorus in the discharge will be higher than the concentration of phosphorus in the influent, but because the Final Permit requires that the load not change (i.e., pounds of phosphorus) and the capacity of the receiving water will change minimally, EPA does not expect that the increase in concentration at the outfall will cause or contribute to algae blooms downstream. The evaporative loss of the river from the cooling towers is less than 6% of the 7Q10 flow of the river. In other words, even at extreme low flows, the “dilution capacity” of the river will be reduced by approximately 6% from the operation of the cooling tower, not 85% as Comment V.B.4 suggests. The Permittee will evaporate 85% of the volume of cooling water between intake (885,000 gpd maximum) and discharge (133,000 gpd maximum), but that is not equivalent to an 85% reduction in the dilution capacity of the river. EPA concludes that prohibiting the permittee from any net increase in the phosphorus load to the river will likely protect existing and designated uses in the Westfield River and prevent the discharge from contributing to a water quality standard violation. *Also see* RTC VI.G.5 regarding turbidity concerns.

Comment # VI.B.7	Commenter: 31
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“According to pages 34 and 35 of the Fact Sheet, the discharge is estimated to increase the total phosphorus in the river about 40% (0.01 to 0.014 mg/l), thus having the potential to contribute to a degradation in the river, especially in low flow summer months when the dilution is down but energy demand is up. The instream concentration is estimated to be below ecoregional criteria, but the reach is already considered impaired for nuisance aquatic species. We believe that the Fact Sheet and the draft permit are not in compliance with 40 CFR 122.4(i), which states that no permit can be issued to a new source or new discharger if the discharge will cause or contribute to a water quality violation. A TMDL has not been completed for this stretch of river, there is no guarantee that there are sufficient waste load allocations to allow the discharge, and the Fact Sheet has not demonstrated that the EPA Director has waived these requirements, as required under 40 CFR 122.4(i)2.”

Comment # VI.B.8	Commenter: 31
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“A core point is CRWC’s view that this permit should not be issued until a total maximum daily load (TMDL) is developed for the impacted river stretch. As a “new discharger,” Russell Biomass will be discharging phosphorus and total suspended solids (TSS) into a segment of the Westfield River that is already listed as impaired for nuisance aquatic species (interpreted to mean nutrients like phosphorus) and turbidity. 40 C.F.R. § 122.4(i) addresses the situation where a new discharge seeks to permit a discharge of pollutants into a stream already exceeding its water quality standards for that pollutant.

Section 122.4 states in relevant part: No permit may be issued:

....

(i) To a new source or a new discharger if the discharge from its construction or operation will cause or contribute to the violation of water quality standards. The owner or operator of a new source or new discharger proposing to discharge into a water segment which does not meet applicable water quality standards or is not expected to meet those standards ... and for which the State or interstate agency has performed a pollutants load allocation for the pollutant to be discharged, must demonstrate, before the close of the public comment period, that: (1) There are sufficient remaining pollutant load allocations to allow for the discharge; and (2) The existing dischargers into that segment are subject to compliance schedules designed to bring the segment into compliance with applicable water quality standards. The Director may waive the submission of information by the new source or new discharger required by paragraph (i) of this section if the Director determines that the

Director already has adequate information to evaluate the request. An explanation of the development of limitations to meet the criteria of this paragraph (i)(2) is to be included in the fact sheet to the permit under §124.56(b)(1) of this chapter.

The plain language of the first sentence of the regulation is very clear that no permit may be issued to a new discharger if the discharge will contribute to the violation of water quality standards. This corresponds to the stated objectives of the Clean Water Act “to restore and maintain the chemical, physical, and biological integrity of the nation's waters.” 33 U.S.C. § 1251(a) (1987). Currently, there is no TMDL for which to base plans or compliance schedules in this river segment or any other river segment in the Connecticut River watershed, despite numerous impairments. For this exception to apply to the Russell Biomass discharge, there must be a TMDL for the relevant impaired waters, and the EPA, MassDEP, and Russell Biomass must show that there is sufficient loading capacity remaining in waste load allocations for the river segment to accommodate the new discharge and that existing dischargers to that segment are subject to compliance schedules designed to bring the segment into compliance with the applicable water quality standards. This has not been done. If the EPA administrator has instead chosen to waive the requirement of the TMDL as in part (2) quoted above, the Fact Sheet gives no indication of this. We do not feel there is enough information available about pollutant load allocations in this river segment to make an accurate assumption that the discharge will not cause or contribute to an impairment. There is no denying that the facility will be adding phosphorus and suspended solids to a river segment already impaired for these pollutants. The permit assigns numerical limits at some of the outfall points, but for some of the discharge points, the permittee will simply be measuring the amount in the discharge. We feel that without a TMDL in place as federal regulation requires, allowing these discharges is not warranted.”

Comment # VI.B.9	Commenter: 03
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“Slide 19 – CWA antidegradation: pollutant discharges that might cause or contribute to the existing causes of the impairment are **prohibited**: again mandatory language.

Slide 20 - RB will add more of the pollutants that cause algae and visibility problems: TSS and phosphorous

Slide 21 Section 303 d of CWA requires a clean up plan [TMDL]– the state does not have one it is in violation of the law.”

“And the law says that no new discharge of pollutants that cause and contribute to these kind of impairments of the river will be allowed. We would like to know where Massachusetts' cleanup plan is.”

Response # VI.B.7-9	Commenter's: 03 and 31
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EPA acknowledges that 40 CFR 122.4(i) would prohibit a new source or discharger from discharging to an impaired water if the discharge would cause or contribute to the violation of water quality standards. Since issuance of the Draft Permit, dense algal growth has been observed in Segment MA32-05 of the Westfield River upstream of the Westfield WPCP. In addition, the RBP study from the 2001 Westfield River Watershed Assessment Report suggests that existing levels of fine particulate organic matter may be contributing to slight impairments in the macroinvertebrate community compared to the upstream reference site, including displacement of some pollution sensitive taxa. In response, the Final Permit at Part I.A.1.footnote 7 prohibits a net increase in the phosphorus load to the receiving water from the effluent. This condition will ensure that phosphorus levels in the river are not increased due to the discharge from RB, and will not result in an increase in total phosphorus in the river. As such, EPA concludes that the proposed discharge will not cause or

contribute to a violation of narrative water quality standard 314 CMR 4.05(5)(c) and that the phosphorous waste load does not represent a discharge that requires prohibition in accordance with 40 CFR 122.4(i). *Also see* RTC VI.B.3-6 and RTC VI.G.5. RTC VI.G.5 addresses TSS and turbidity concerns.

Comment # VI.B.10

Commenter: 15

“I do remain concerned about the levels to be discharged of phosphorous, oil and grease into the Westfield River. In Westfield our wastewater treatment plant pays a significant amount of money every year. It's over \$200,000 that we spend in our city to remove phosphorous from the river. Our manager of our wastewater facility, the wastewater treatment plant, read your draft proposal and he's extremely concerned with some of the levels, especially phosphorous. Well, he's concerned with oil and grease, too, he's appalled, because we are not allowed to put one drop of oil and grease back into the river. And it just seems amazing that the Biomass facility would be able to do that. But, again, we've spent over \$200,000 to remove phosphorous. The levels of phosphorous that are going to come into our city through the river are higher before they even hit our plant than we're mandated to have as we release our water after we've treated it. So already we're behind the eight ball. I mean, we're estimating in increased costs well over 400,000 if these levels of phosphorous are allowed -- are to be allowed. I mean, that's why I'm here. You know, I respect the boundaries of Russell and I respect the people in Russell, pro and con, working on this issue, but I'm here because it affects me and the people I represent.”

Comment # VI.B.11

Commenter: 31

“Part of the rationale about phosphorus levels in the river is based on the Westfield WWTP’s re-issued NPDES permit, as described on page 35 of the Fact Sheet. A draft NPDES permit for the Westfield WWTP was available for public comment last year (comments due September 23, 2008). The final permit has not been issued by EPA. The draft permit proposed more stringent phosphorus limits, but without a final permit, it is not certain what levels will be required and whether they are sufficient to rehabilitate this section of the river. We also do not see how EPA can be certain this source of phosphorus is the main source of the impairment.”

Response# VI.B.10-11

Commenter’s: 15 and 31

The Westfield Water Pollution Control Plant (WPCP) Final NPDES Permit was issued on September 30, 2009. Both the Russell Biomass Final Permit and Westfield WPCP Final Permit contain the same prohibition for oil and grease: “The effluent shall not contain a visible oil sheen, foam, or floating solids at any time.” In addition to this provision, the Russell Biomass permit requires the Permittee to monitor and report the concentration of oil and grease at outfall 001 and includes technology-based numeric limits for oil and grease in the low volume waste at internal outfalls 002 (prior to mixing with cooling water) and outfall 003 (prior to mixing with cooling tower blowdown) based on the steam electric guidelines. *See* 40 CFR Part 423. In fact, the technology-based numeric limits at the internal outfalls are more stringent than the narrative limitation in the Westfield WPCP permit because they require the permittee to meet stringent standards prior to dilution with cooling tower water and cooling tower blowdown. Numeric limits ensure that these internal effluent flows meet stringent standards for oil and grease in low volume waste prior to dilution with cooling tower waters, and the narrative prohibition on visible oil sheens, like at Westfield WPCP, will ensure that instream WQS are met.

Because instream phosphorus levels may, during certain periods (e.g., extreme low flows), be contributing to excessive algal growth upstream of the Westfield WPCP, the Final RB Permit prohibits Russell Biomass from adding to the existing instream phosphorus load in the Westfield River. *See* RTC VI.B.3-6 and VI.B.7-9 above.

Comment # VI.B.12	Commenter: 13
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“2. The discharge of any Oil and Grease above ambient stream levels is completely unacceptable. No oil and grease discharge shall be allowed. A Zero Liquid Discharge System would alleviate this pollution source and is the preferred alternative.”

Comment # VI.B.13	Commenter: 31
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“The effluent limit for oil and grease at internal outlet 002 [and outfall 003] is 15 mg/L (average monthly) and 20 mg/L (maximum daily). We note that the limits in the NPDES permit for the McNeil plant in Burlington VT is 10 mg/L and 15 mg/L, respectively. We wonder about the rationale behind adopting a different set of limits used for another similar power plant, and suggest you consider adopting the same limits.”

Response # VI.B.12-13	Commenter's: 13 and 31
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EPA acknowledges the commenter's concern. The internal outfall limits for oil and grease in the RB permit are based on the Steam Electric ELGs for low volume wastes. *See* 40 C.F.R. §§ 423.12(b)(3) and §§ 423.15(c). EPA determined on a BPJ basis that these technology-based limits are appropriate for the RB permit, as explained in the Fact Sheet at page 37. The McNeil plant limits were carried over from the previous permits and EPA assumes that these limits were derived based on water quality-based concerns.⁴

EPA determined, for the RB permit, that water quality-based limits for oil and grease are less stringent than technology-based limits that are in the permit. The current (January, 2007) Massachusetts Surface Water Quality Standards at 314 CMR 4.05(b)(7) require that Class B waters “shall be free from oil, grease and petrochemicals that produce a visible film on the surface of the water, impart an oily taste to the water or an oily or other undesirable taste to the edible portions of aquatic life, coat the banks or bottom of the water course, or are deleterious or become toxic to aquatic life.” EPA believes, considering the flow from these internal outfalls and the available source water dilution, that the technology-based limits of 15 mg/L (average monthly) and 20 mg/L (maximum daily) would not begin to “produce a visible film on the surface of the water, impart an oily taste to the water or an oily or other undesirable taste to the edible portions of aquatic life, coat the banks or bottom of the water course, or are deleterious or become toxic to aquatic life.”

Comment # VI.B.14	Commenter: 12
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“Page 4 of 15: Paragraph 2. Effluent testing for suspended solids, oil, and grease should be conducted more frequently than quarterly. Quarterly testing will permit discharge of higher- than-authorized

⁴ The Vermont Water Quality Standards, Vt. Code R. 12 004 052, Effective January 1, 2008, at Section 3-01.B.5 require: “*Settleable solids, floating solids, oil, grease, scum, or total suspended solids* - None in such concentrations or combinations that would prevent the full support of uses.”

quantities of permitted effluents, and the discharge of other, unauthorized laboratory substances to occur without detection. Page 5 of 15: Paragraph 3. Paragraph 2 comments apply here as well.”

Response# VI.B.14	Commenter: 12
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Monitoring frequency is determined on a case-by-case basis. According to the September 2010 NPDES Permit Writers’ Manual, the intent is to “characterize the effluent quality and to detect events of noncompliance, considering the need for data and, as appropriate, the potential cost to the permittee.” (page 8-5). In establishing monitoring frequency, the permit writer estimates the variability of the concentration of the parameter by reviewing effluent data for the facility, or in the absence of such data, by reviewing data from similar dischargers.

“A highly variable discharge should require more frequent monitoring than a discharge that is relatively consistent over time (particularly in terms of flow and pollutant concentration).” *Id.* In the case of these outfall locations, EPA determined that quarterly sampling would obtain enough data to develop characterizations, given that the discharge from outfall location 003 should be relatively consistent and considering the flow at internal outfall 002 will be approximately 500 gallons per day. *See* the water balance flow diagram, Attachment C of the Fact Sheet.

C. pH

Comment # VI.C.1	Commenter: 09
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“So you know that the chemicals and heat, it's going to change the pH. None of that, you know, is good at all.”

Response# VI.C.1	Commenter: 09
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EPA acknowledges the commenter’s concern. As stated in EPA’s Gold Book, “pH has a direct effect on organisms as well as an indirect effect on the toxicity of certain other pollutants in the water.”⁵ The pH effluent limitation in the Draft Permit of 6.5-8.3 SU is based on the Massachusetts Surface Water Quality Standards, 314 CMR 4.05(3)(b)(3), which states that for Class B waters, “pH. Shall be in the range of 6.5 through 8.3 standard units and not more than 0.5 units outside of the natural background range.” The pH standard is for the receiving water and not necessarily the effluent, however, standard practice for new and renewed permits has been to require that the pH match the receiving water classification. In some instances, EPA has allowed a pH range of 6.0-9.0 SU where there is sufficient dilution, which is also a technology-based limit found in the Steam Electric ELGs, *see* 40 C.F.R. § 423.12(b)(1) and 40 C.F.R. § 423.15(a). The RB permit requires that the pH of the effluent and stormwater is adjusted to meet the water quality-based limits specified prior to discharge. EPA believes that the restrictions and limitations required by the Final Permit protects the water quality of the Westfield River and ensures that the water quality standards are not violated.

D. Aluminum

Comment # VI.D.1	Commenter: 25
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“EPA requested additional information to determine if aluminum based piping or other materials would come in contact with process wastewater, creating a potential to leach aluminum into the

⁵ Water Quality Criteria for Water 1986 (The Gold Book). (EPA 440/5-86-001, May 1986)

discharge. Proposed materials of construction were reviewed, and no aluminum based metals will be used for construction of any wetted process equipment.”

Response # VI.D.1	Commenter: 25
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EPA prohibited Russell Biomass from using water or waste water treatment chemicals that contain aluminum or aluminum compounds. In addition EPA is satisfied that there will be no aluminum-based piping utilized that may “come in contact with process wastewater, creating a potential to leach aluminum into the discharge.” Aluminum is toxic to fish, causing pulmonary and developmental problems.

Comment # VI.D.2	Commenter: 30
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“Aluminum It is good news that the permit prohibits the use of aluminum-containing compounds for water treatment at the plant. However, the same argument pertains for aluminum that pertains for phosphorus – that the concentration of aluminum as cooling water, and the re-discharge of remaining cooling water back to the river, constitutes nearly as much of an addition of a “novel” pollutant as if the aluminum had been added directly. Further, the impacts are probably greater than even the modeling would indicate. Data on aluminum concentrations in the river was collected upstream of the Texon plant, which has a NPDES permit that allows it to discharge up to 1.3 mgd of effluent containing up to 2.4 mg/L aluminum. This translates to about 26 lb of aluminum per day that can be added to the river by the Texon plant. If calculations of the amount of aluminum taken in by the Russell plant and then re-discharged to the river were based on water quality data collected below the Texon plant, the calculated loadings could well be higher. Discharging aluminum-containing waters into a mixing zone of dubious efficacy may present a real threat to indigenous and stocked fish, including juvenile Atlantic salmon, which are known to be particularly sensitive to aluminum.”

Response # VI.D.2	Commenter: 30
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EPA recognizes the potential adverse impacts of elevated aluminum concentrations. As a result, Part I.A.6.b of the Final Permit prohibits the Russell Biomass facility from introducing any additional aluminum to the Westfield River.

The commenter correctly points out that, as a result of the recycling of water through the cooling towers and the evaporation of the cooling water, the concentration of aluminum will be greater at the discharge compared to the influent even though the Permittee has not contributed any additional mass of aluminum. According to Russell Biomass, the concentration of aluminum may be 7.4 times higher at the discharge location than at the intake based on the assumptions of a maximum recirculation rate of 7.4 times and no removal of aluminum through the raw water solids removal system.

EPA has analyzed the potential effects of Russell Biomass’ operation on the in-stream concentration of aluminum in the Westfield River. EPA reviewed Westfield River instream aluminum data from the whole effluent toxicity tests of receiving water from the Russell WWTP (downstream of the Texon facility) between 2000 and 2010. This data indicate that the instream aluminum concentrations exceeded the chronic instream aluminum water quality criterion (87 µg/L) in approximately 30% of available samples. However, other available data does not suggest an obvious source of the elevated aluminum concentrations (e.g., at times aluminum concentrations in the receiving water upstream of the Texon discharge exceed WQS). Elevated levels may be a

combination of naturally occurring sources, excessive sediment in runoff, greater aluminum solubility with acid precipitation, and point sources.

Using this data set, EPA analyzed the potential effects of Russell Biomass's operation on the in-stream concentration of aluminum in the Westfield River and determined that any potential increase in the in-stream aluminum concentration due to Russell Biomass is likely to be undetectable using traditional laboratory techniques and would not adversely affect existing or designated uses. Therefore, it is not possible to develop a scientific sampling scheme that would quantify the difference in the in-stream aluminum concentration attributable to Russell Biomass's operation. However, EPA will require that Russell Biomass collect upstream, downstream, and plant discharge aluminum data and submit a study to EPA on the levels of aluminum in the Westfield River. *See* Part I.A.1.f of the Final Permit for the specifics of in-stream sampling. This information will check the assumption that Russell Biomass's cooling towers do not concentrate aluminum to levels that are quantifiable within the Westfield River, as well as aid EPA in future permitting actions.

After a reasonable amount of sampling is completed, the Permittee may request a reduction in frequency providing the data demonstrates there is no reasonable potential to cause or contribute to an exceedance of the in-stream water quality criteria. *See* Part I.A.1.h.

Part I.A.1.g of the Permit requires that within 24 months of the effective date of the permit, the Permittee shall prepare and submit to EPA and DEP a proposal to study the exceedances of the chronic State Water Quality Standard (WQS) for aluminum in the Westfield River and means by which the Permittee can mitigate these exceedances. This study shall include collecting, presenting and evaluating reasonably available in-stream water data relevant to the attainment of State WQS for aluminum; information regarding the sources of aluminum in the Westfield River; information regarding the contributory loads of aluminum to the Westfield River; and an evaluation of the variation and distribution of aluminum levels in the Westfield River. The final study report shall be submitted to EPA and MassDEP within 3 years of the effective date of the permit. Should evidence demonstrate that the river is impaired for aluminum, EPA anticipates developing waste load allocations for the other dischargers located on the river.

E. 126 Priority Pollutants

Comment # VI.E.1	Commenter: 13
<p>"3. Section 1.e. (page 3) is unacceptable. The EPA and DEP should not allow (discretion) the applicant to avoid actual monitoring and full testing for the 126 Priority Pollutants. This is at the permit writer's discretion. Elimination of Priority Pollutants is the heart of the CWA and WQA amendments, and subsequent court-ordered legal agreements, and waiving this requirement is totally unacceptable. The incinerator should have to monitor upstream water quality for the 126 Priority Pollutants, and should not be able to discharge any concentrated effluent above the up-gradient background levels. This is the intent of the NPDES system. Since this incinerator will essentially be a pollutant concentrating system, due to the evaporation of 85% of the intake water, the upstream monitoring is critical to ensuring that there are not increased discharge levels generated by the concentration of pollutants. In aquatic systems, concentration of pollutants has a direct impact on biological response. No increase in pollutant concentration, including naturally occurring or upstream pollutants should be allowed. As previously stated, a Zero Liquid Discharge System would alleviate</p>	

this pollution source, but barring that, up-gradient and full Priority Pollutant monitoring must be used at this facility.”

Comment # VI.E.2	Commenter: 13
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“As far as the discharge goes, looking at Section (e), it talks about the heart of the NPDES system and the Clean Water Act and the Water Quality Act and that is what's called 126 priority pollutants, and there's a reference in here, you can read it in the draft, but it says here that engineering calculations can be used, so that the cooling tower blow-down water, which contains an incredible amount of contaminants, potential contaminants. Extensive literature and research has shown that blow-down cooling water contains volatile organic compounds, process controlled lubricant compounds, can contain all kinds of other priority pollutants.

But in this one paragraph here, Section (e), it says that all of the standards for the 126 priority pollutants can be bypassed and substituted for actual testing if the applicant submits an engineering calculation that miraculously shows that no pollution will be generated by this facility. An engineering calculation, that means that no testing is required at all for the heart of the Clean Water Act and the Water Quality Act.”

Response # VI.E.1-2	Commenter: 13
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EPA disagrees that the permit should not allow the calculation of cooling tower chemical concentrations in lieu of sampling. The effluent guidelines found at 40 CFR Part 423 clearly allow this method of compliance determination. Although RB is not subject to the Steam Electric Effluent Guidelines, as discussed in detail in the Fact Sheet, EPA concluded on a BPJ basis that the BAT (and NSPS) limits from this specific ELG is appropriate to apply to the Russell Biomass facility. Therefore, EPA based the priority pollutant limits and other associated provisions in the Draft Permit on the BAT and NSPS requirements in the Steam Electric ELGs.

Comment # VI.E.3	Commenter: 31
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“We recommend that the 126 priority pollutants be tested more than once per year.”

Comment # VI.E.4	Commenter: 31
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“We would prefer that actual testing of priority pollutants be relied on more often than engineering calculations to determine levels of priority pollutants in the system. The tests can verify the accuracy of calculations, but more than one test should be done to verify this.”

Response # VI.E.3-4	Commenter: 31
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Monitoring frequency is determined on a case-by-case basis. According to the NPDES Permit Writers' Manual, in establishing monitoring frequency, the permit writer estimates the variability of the concentration of the parameter by reviewing effluent data for the facility, or in the absence of such data, by reviewing data from similar dischargers. “A highly variable discharge should require more frequent monitoring than a discharge that is relatively consistent over time (particularly in terms of flow and pollutant concentration).”⁶ In the case of this permit, 126 priority pollutant data will be collected on an annual basis because these pollutants are not expected to be in the effluent at detectable levels. This monitoring frequency was chosen to obtain enough data to confirm

⁶ U.S. EPA NPDES Permit Writers' Manual, September 2010, EPA-833-K-10-001, page 8-5.

compliance of these limits over the permit term, while at the same time not requiring overly burdensome monitoring requirements.

As explained on page 19 of the Fact Sheet:

“EPA has, on a BPJ basis, based the priority pollutant limits in the Draft Permit on the BAT and NSPS requirements in the Steam Electric ELGs. *See* 40 C.F.R. §§ 423.14(d)(1) and 423.15(j)(1) (for cooling tower blowdown).

The 126 priority pollutants requirement refers to those pollutants that are contained in chemicals added for cooling tower maintenance. However, since Russell Biomass also adds boiler blowdown waste to the cooling tower, the Draft Permit limits also apply to chemicals used in the boiler. No detectable amount of priority pollutants are allowed in the discharge. These technology based limits are more stringent than calculated water quality limits and therefore govern the permit.”

The Permittee is required to sample the 126 priority pollutants annually until (if ever) they receive written approval from EPA that the engineering calculations are sufficient to meet this requirement. *See* Part I.A.1.e of the Final Permit.

F. WET Testing Requirements

Comment # VI.F.1	Commenter: 31
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“We are supportive of WET testing in the permit for two species. However, the WET tests do not mimic the temperature regime in the receiving water and this seems to be a flaw. The Fact Sheet goes into great detail to show there will be almost no increase in temperature associated with this noncontact cooling water discharge, but when it comes to aquatic species and the synergistic impacts of all of the pollutants associated with a discharge, it would be more appropriate to conduct WET tests using the temperature regime in the receiving water. At a minimum, the dilution water should be taken below the impoundment so it is the right temperature, not upstream of the impoundment where it is likely a different temperature. Also, are salmon fry more sensitive than the fathead minnow? Given the large federal and state resources devoted to the reintroduction of Atlantic salmon, it would be a shame if the WET tests did not serve as an adequate surrogate for determining if the salmon fry might be impacted by the discharge conditions.”

Response# VI.F.1	Commenter: 31
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The main objective of WET testing is to identify effluents and receiving waters containing toxic materials in acutely toxic concentrations. The Technical Development Document for Water quality-based Toxics Control (EPA 1991) describes WET testing as “a useful parameter for assessing and protecting against impacts upon water quality and designated uses caused by the aggregate toxic effect of the discharge of pollutants.” The Final Permit has separate monitoring requirements to confirm that temperature does not adversely impact the biological community. In addition, WET testing is conducted at a standardized temperature specified by the testing protocol. The sample is a 24-hour composite sample which is held at a specific temperature and transported to a laboratory, where it is brought to the temperature specified in the protocol before testing. The dilution water is similarly held at a certain temperature and brought to the protocol-specified temperature prior to

testing. For this reason, the temperature of the dilution and sample water at the time of collection does not affect the test results.

EPA agrees that salmonids may be more susceptible to toxicity than the fathead minnow (e.g., effect of aluminum on Atlantic salmon). Atlantic salmon are not readily available as a test species and no standard protocol exists for this species. The Technical Development Document for Water Quality-based Toxics Control (EPA 1991) specifies that “EPA considers it unnecessary to test resident species since standard test species have been shown to represent the sensitive range of all ecosystems analyzed [54]. Resident species toxicity testing is strongly discouraged unless it is required by State statute or some other legally binding factor, or it has been determined that a unique resident species would be far more protective of the receiving water than the EPA surrogate species.” In this case, rainbow trout are available year round, have a standard protocol for WET testing, and are likely to be representative of the impacts for multiple cold water species present in the Westfield River.

Therefore, the Final Permit requires WET testing be conducted on Rainbow Trout (*Oncorhynchus mykiss*) for two years and directs the Permittee to follow Table 15 (Test Method 2019.0) on pages 57-58 of EPA’s *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, 5th edition (Oct 2002). EPA-821-R-02-012, which is available at http://water.epa.gov/scitech/methods/cwa/wet/upload/2007_07_10_methods_wet_disk2_atx.pdf In addition, Attachment A - Freshwater Acute Toxicity Test Procedure and Protocol has been updated and replaced with the February 2011 version in the Final Permit.

G. Stormwater

Comment # VI.G.1	Commenter: 08
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“it's my understanding there's a sediment pool involved here? [Storm water]
And I don't know what that's all really about, but that sounds like Jurassic Park technology right there, and this is crazy.”

Comment # VI.G.2	Commenter: 31
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“The Fact Sheet on page 12 does not adequately describe the stormwater collection process. It is not clear what areas are draining to what outfall pipes, the acreage and the treatment of each stormwater discharge catchment. Based on the Final Environmental Impact Report (FEIR), we were under the impression that outfall 004 collected stormwater from detention basin #1 and discharged to a manhole, which is then combined with process wastewater from the plant and discharged at outfall 001. Stormwater from detention basin #2 is to be discharged to outfall 005, then flow overland to an existing outfall 006. Outfall 006 is not described in the Fact Sheet. EPA states on page 13 of the Fact Sheet that it believes the discharge from outfall 005 will not reach the Westfield River, and says that the Draft Permit includes monitoring requirements in cases when a discharge does occur. If the monitoring requirements mentioned here are those described in part I.A.4(b), this should be identified in the permit as outfall 006, and more specific sampling directions should be established. The Fact Sheet does not give indication of the receiving area and land uses contributing to detention basins #1 and #2.”

Response # VI.G.1-2	Commenter's: 08 and 31
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The commenter is correct, detention basin #1 will discharge storm water through a manhole (Outfall 004) that will combine with process wastewater from the plant (sampling is required before these

streams combine). Stormwater from detention basin #2 will discharge to Outfall 005, then flow overland, however, there will be no additional outfall location (i.e., 006) at the river bank. RB provided a detailed description of the existing and proposed stormwater discharges in their Draft EIR including a complete modeled drainage analysis. *See* Section 6.1 and Appendix D of the Draft EIR. The receiving area and land use for the site is industrial and consists of wood chip piles, roads, parking lots, and buildings.

The proposed stormwater management system for the northern portion of the property includes the following improvements: paving or improved gravel resurfacing of existing unpaved roadways, paving of woodchip storage areas and construction of two new stormwater sedimentation/retention/infiltration basins.

The wood chip storage areas are currently unpaved areas used for log storage. Paving of these areas will serve to significantly reduce sediment and associated turbidity that is currently discharged directly to the Westfield River via the existing system of catch basins and a piped discharge. Stormwater from the northern portion of the site will be collected through a new catch basin system connected by subsurface pipes which will carry the stormwater to a new stormwater sedimentation/retention/infiltration basin. The basin is designed with a sediment forebay to collect and remove solids. The basin will also provide infiltration of stormwater. The outlet structure of the stormwater basin is designed to reduce and to limit the peak stormwater flow rates as discussed below.

A similar stormwater sedimentation/retention/infiltration basin including a sediment forebay will be constructed for runoff that leaves the site to the south of the property via overland flow to abutting private property. This structure will reduce existing peak stormwater flows and will provide further reduction of the potential for erosion of abutting private property.

Supplemental Information for NPDES Individual Permit Application [-] Proposed Russell Biomass Facility, dated August 4, 2001, letter from Doris Atkinson, T&B to David Webster, EPA. *Also see* responses to comments VI.G.3, VI.G.5 and VI.G.8.

Comment # VI.G.3	Commenter: 31
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“Because outfall 001 is a combination of process wastewater from the power plant and stormwater, it is not clear if the maximum daily flow rate of 0.133 MGD will be exceeded if the process wastewater is running at a maximum during a time when stormwater is actively discharging. Neither the FEIR nor the Fact Sheet describes potential quantities of stormwater coming from detention basins #1 and #2.”

Response # VI.G.3	Commenter: 31
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Part I.A.1.a of the permit requires that the process wastewater samples at outfall 001 “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.**” (emphasis added) For convenience, EPA assumes that the Permittee will collect the samples just before or after the flow monitoring device. Flow monitoring is required to be continuously recorded as shown in the Part I.A.1 table. The samples that are collected must not contain storm water. Therefore, the maximum daily flow rate of 0.133 MGD applies only to the process water and not to

stormwater. See RTC VI.G.1-2 for more information about the storm water collection and treatment system.

The following table from the 2007 Draft EIR shows existing and proposed peak stormwater flow rates, which are projected to decrease by 62 to 79 percent after the system is completed.

Table 6-4 Comparison of Existing and Proposed Peak Discharge

Point of Discharge		Peak Discharge (cfs)			
		0.5 inch Rainfall	2 year Storm Event	10 year Storm event	100 year Storm Event
To Westfield River – piped discharge	Existing	2.23	10.1	20.5	34.6
	Proposed	0.76	2.1	6.7	13.1
To South – overland flow	Existing	1.49	4.2	7.4	11.5
	Proposed	0.56	1.0	1.6	3.5
To CSX property – overland flow	Existing	0.13	3.2	9.6	19.4
	Proposed	0.01	0.6	2.2	5.1
Totals	Existing	3.85	17.5	37.5	65.5
	Proposed	1.33	3.7	10.5	21.7

Comment # VI.G.4

Commenter: 31

“**Outfalls 004 and 005** ... The flow rate for each of these outfalls is to be “estimated” once per quarter. This is not adequate. Actual flow measurements should be taken until there are enough data points to be able to predict flow rates from rainfall amount. Monitoring requirements should be more frequent than once a quarter.”

Response # VI.G.4

Commenter: 31

EPA does not believe that gathering actual flow measurements, as opposed to estimated flow measurements, in order to predict flow rates from storm events is of added value and the commenter did not provide an explanation as to the usefulness of such a requirement. In addition, EPA disagrees that monitoring should be more frequent than once per quarter. EPA determined that quarterly sampling should provide an accurate representation of the stormwater discharge characteristics. This determination is partly based on the 2008 Final Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activities (MSGP), which also requires quarterly sampling.

Comment # VI.G.5

Commenter: 31

“Given the amount of material moving around the site (wood, ash, waste products, etc), stormwater outfalls 004 and 005 should have stringent TSS limits and more frequent testing requirements than once per quarter. We believe that the Fact Sheet and the draft permit are not in compliance with 40 CFR 122.4(i), which states that no permit can be issued to a new source or new discharger if the discharge will cause or contribute to a water quality violation. This section of river is already impaired for turbidity. A TMDL has not been completed for this stretch of river, there is no guarantee that there are sufficient waste load allocations to allow the discharge, and the Fact Sheet has not demonstrated that the EPA Director has waived these requirements, as required under 40 CFR 122.4(i)2.”

Response# VI.G.5

Commenter: 31

Pursuant to regulation, EPA agrees that there should be no increase in turbidity caused by the RB facility over background conditions so that the discharge does not cause or contribute to a water quality violation.

All streams have some degree of sediment quantity and even the most pristine rivers will have high turbidity during spring high flow periods. Some factors that cause high turbidity or TSS include:

- erosion from construction or agricultural practices;
- domestic wastewater discharges;
- urban runoff from impervious surfaces such as roads, bridges and parking lots;
- certain industrial sources such mining and quarrying;
- flooding and seasonal increased flow rates; and
- changes in algae populations.

The commenter is correct; a TMDL has not been completed for this stretch of river, which is impaired for turbidity. There is no numeric, Massachusetts State Water Quality Standard for turbidity. The current (January, 2007) Massachusetts Surface Water Quality Standards at 314 CMR 4.05(b)6 require that Class B waters “shall be free from color and turbidity in concentrations or combinations that are aesthetically objectionable or would impair any use assigned to this Class.”

According to information provided by the Permittee, the RB storm water system will reduce sediment and turbidity levels compared to current conditions. *See* Section 6 of the 2007 Draft Environmental Impact Report and the Supplemental Information for NPDES Individual Permit Application [-] Proposed Russell Biomass Facility, dated August 4, 2001. Based on the proposed treatment system, including two new storm water sedimentation/retention/infiltration basins, and on the requirements of the SWPPP and Part II.B.1, EPA does not believe that there is a reasonable potential for the storm water to cause or contribute to a violation of water quality standards.

To verify that storm water from RB will not increase the turbidity of the Westfield River, EPA is adding a requirement to the Final Permit calling for turbidity monitoring upstream of the facility and at the outfall location. *See* Part I.A.4.h of the Final Permit. In addition, the SWPPP, Part I.A.5.d of the RB Permit requires that the facility implement and document appropriate best management

practices (BMPs) to minimize the discharge of pollutants in the storm water and satisfy the non-numeric technology-based and water quality-based effluent limitations. Furthermore, Part I.A. 7.d of the RB Permit requires the discharges to be adequately treated to insure, among other things, that “the surface waters remain free from pollutants which produce odor, color, taste, or turbidity in the receiving water which is not naturally occurring...”

See response VI.G.4 above for the discussion of sampling frequency.

Comment # VI.G.6	Commenter: 31
“Oil and grease testing, as well as chlorides, should be added to the permit, [outfalls 004 and 005] because there will be a great deal of truck traffic and this might require a fair amount of road salt, which might then affect stormwater quality.”	

Response# VI.G.6	Commenter: 31
These factors were considered during the development of the Draft Permit. The Stormwater Pollution Prevention Plan (SWPPP) requirements include best management practices (BMPs) consistent at least with the control measures described in the most current version of the MSGP. BMPs must be selected and implemented to satisfy non-numeric technology-based effluent limitations, including:	
<ul style="list-style-type: none"> “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.” (emphasis added) 	

In addition, the Permittee is required to inspect, on a quarterly basis, all samples collected from outfalls 004 and 005 and all areas with industrial materials or activities exposed to stormwater. Documentation of each inspection must contain, among the many specified, the water quality characteristics of any samples collected including: color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of pollution. Records of each inspection must be maintained on site with the SWPPP and these reports are available to EPA either by request or during an inspection. It is standard practice that EPA does not require hard copies of these inspection reports on a regular basis. In addition, Part I.A.7.d of the permit requires that:

“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.”

EPA may take enforcement action if this or any other requirement of the Final Permit is violated.
Also see RTC VI.G.11.

Comment # VI.G.7	Commenter: 31
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“Page 10 of the Fact Sheet states that the power plant and related facilities take up approximately 20 acres of flat, cleared ground. The Fact Sheet did not state how large the outdoor fuel storage areas are, the size of each area contributing stormwater to outfalls 004 and 005. Given the large size of the facility, we recommend that there be at least 2-4 tests of *E. coli* bacteria required from the stormwater to make sure there is no surprise input of bacteria to the river. This has also been required in the recently revised NPDES permit for the Solutia in the Indian Orchard section of Springfield.”

Response # VI.G.7	Commenter: 31
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EPA added once per year *E. coli* reporting requirements at the storm water outfalls for the Solutia Final Permit because the Chicopee River is impaired for pathogens and the 83.6 acre Solutia site is 70% impervious, which results in stormwater runoff that is more likely to have high bacteria levels. The Westfield River segment adjacent to the proposed 20 acre Russell Biomass site is not impaired for pathogens. Furthermore, EPA made a BPJ-based determination to add monitoring requirements to the RB permit consistent with the 2008 Final Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activities (MSGP), Part 8, Subpart O – Steam Electric Generating Facilities and Part 8, Subpart A – Timber Products, Subsector A3 – Log Storage and Handling Facilities. Pathogen testing is not included in these MSGP categories. At this time, EPA can not justify a permit requirement for *E. coli* for the Russell Biomass site.

Comment # VI.G.8	Commenter: 31
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“The stormwater from outfall 005 is to travel overland into the river. This could be a concern if the area the runoff will travel over is littered with wood bits, ash or other debris. The outfall sampling point is located before the overland travel. The final amount of TSS and potentially BOD (depending on what is on the ground) will not be reflected in the testing. There also might be erosion concerns depending on what this overland flow is like—is the flow directed it to a grassed swale? The permit in I.A.11(d) prohibits any sort of wood debris or ash from getting into the stormwater collection system but without better monitoring (at least at 005) it may not be possible to tell if this requirement is consistently met.”

Response # VI.G.8	Commenter: 31
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In the August 4, 2011 Supplemental Information for NPDES Individual Permit Application Proposed Russell Biomass Facility, RB explains that:

While the discharge from the southern portion of the site does not result in a direct discharge to the waters of the United States normally regulated under the NPDES permit program,

Russell Biomass included this discharge in the permit application as a very conservative measure to assure that all site drainage issues were addressed.

Drainage from the south of the site will be discharged via overland flow in the same area where site drainage from this portion of the site currently discharges. However, on-site improvements are proposed to further reduce potential erosion of abutting private property. We specifically note that peak stormwater flow rates will be less than current peak flow rates. Under the proposed facility design, a stormwater sedimentation/retention/infiltration basin that includes a sediment forebay will be used to treat stormwater for solids removal and to minimize peak flows. Currently there is no treatment for stormwater from this portion of the site. A stone energy dissipation apron will further reduce erosion potential as the flow from the stormwater basins are directed to the current natural overland flow area.

The overland discharge area is physically separated from the Westfield River by the CSX railway. The nearest culvert crossing for the railway is approximately 2,750 feet to the south of outfalls 005 and 006 (as identified in the permit application numbering system). Down gradient of the culvert, there is an intermittent stream that flows another 1,350 feet to the Westfield River. The total distance from the overland flow discharge location to the Westfield River is approximately 4,100 feet or 0.78 miles. The soils down gradient of the Russell Biomass site are generally coarse and rapidly infiltrating. Based on the very large distance to the Westfield stormwater from the southern portion of the proposed Russell Biomass facility will not constitute a direct discharge.

Although it is unlikely that the stormwater discharge from outfall 005 will reach the river, the final permit requires sampling at outfall 005 if this does occur and EPA has added the following additional requirement in Part I.A.4.g of the Final Permit:

“If stormwater from outfall location 005 results in actual discharge to the Westfield River, the Permittee shall report to EPA and MassDEP the days during which an outfall 005 discharge occurred with each Discharge Monitoring Report.”

Comment # VI.G.9

Commenter: 31

“Part I.A.11(d) states that no wood chips, sawdust, waste ash, or other wood-related debris shall enter the Westfield River from the facility or any runoff area. We support this requirement in the permit.”

Response# VI.G.9

Commenter: 31

EPA acknowledges the commenter’s support for this stormwater requirement.

Comment # VI.G.10

Commenter: 25

“The table in Part I.A.4 outlines Discharge Limitations for stormwater. The discharge limitation for pH is expressed as being 6.5 to 8.3 standards units. However, item I.A.4.e acknowledges that stormwater pH may be outside of this range (particularly lower) due to the pH of rainfall and allows the pH of the stormwater discharge to be outside of the specified range as long as it is not more than 0.5 units outside of the naturally occurring range. We recommend that a footnote be added to the Table to refer to Part I.A.5.e to further clarify this allowance.”

Response # VI.G.10

Commenter: 25

Part I.A.4 indicates that “[s]uch discharges shall be limited and monitored by the Permittee as specified below.” Therefore, both the table and the items “a” through “f” of Part I.A.4 refer to the Permittee’s authorization to discharge from outfall serial numbers **004** and **005**: storm water runoff to the Westfield River. EPA does not believe it is necessary to further clarify this requirement and assumes that the commenter was referring to Part I.A.4 and not Part I.A.5. With that said, EPA agrees to add “or within 0.5 units of the rainfall pH” to the Part I.A.4 table in the Final Permit, with an additional footnote that refers the reader to Part I.A.4.e for additional information. For further clarification, the word “rainfall” replaces “upstream” in Part I.A.4.e of the Final Permit.

Comment # VI.G.11

Commenter: 21

“The reason I brought the truck poster is because you may or may not be aware that the proposed trucking road would run just right next to the river, along the impoundment on the westerly side, directly above the river for half a mile, about, and then 200 feet above the river for another half mile around Turtle Bend (phonetic) Mountain. I have been researching Biomass power plants extensively for four years and they take out -- that the trucks are carrying already chipped wood and the dust and the wood dust and wood chips do fall on the roadways, and you can expect to find that detritus on the roadways. Trucking would be five days a week, year around. And then the ash trucks are carrying hot ash, which is watered down, and so the trucks also deposits dry ash and/or wet slurry on the road. And I'm concerned that this would change the pH and the chemical content of the water in the impoundment going in. And my understanding is that you can look at the storm water on that as a part of this permit, because the storm water control on those roadbeds, a portion of it is inferior and is not going to be upgraded to in order to put the trucking road around the mountain. And this poster has 840 trucks a week, but the recent notice of the project changed to NEPA specified that the project would have up to 1100 trucks. That's 550 physical trucks, 1100 trips. So this is just a portion, two-thirds or five-sixths, that is the portion of the weekly trucks that would be running right along the river and possibly affecting the chemical content of the river.”

Response # VI.G.11

Commenter: 21

EPA acknowledges the commenter’s concern and has addressed these stormwater discharges associated with industrial activities at the site, in the permit. Specifically, the permit requires that “[w]ood 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.” *See* Part I.A.11.d of the Final Permit.

Stormwater discharges from municipal roads and other offsite locations are not regulated by this permit, as these are not stormwater discharges associated with industrial activities as defined by 40 CFR 40 CFR 122.26(b)(14)(i)-(xi). However, the trucks must comply with Federal Motor Carrier Safety Administration’s Cargo Securement Rules.

That being said, EPA urges RB to use the motor carrier industry’s best practices and recommendations to ensure that the cargo arriving and leaving the RB property is secure.

Comment # VI.G.12	Commenter: 31
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“We have reviewed the Burlington VT McNeil plant's NPDES permit, and see that it requires a single priority pollutant scan that includes volatile organics, pesticides, and metals. The draft permit for RBM includes a priority pollutant scan, but for the chemicals added for cooling tower maintenance only. Given that timber stands are sometimes given a pre-harvest application of herbicides (see Forest Cutting Plan for Savoy Mountain State Forest in Savoy MA, file number 263-2612-7; glyphosate is likely the herbicide used), we would recommend that a full priority pollutant scan of the stormwater discharge be required for 2-4 sampling periods. There may be herbicides or other chemicals not currently anticipated in stormwater. Additionally, if wood fuel other than green wood chips is used, such as pallets, then a new round of sampling should be required.”

Response# VI.G.12	Commenter: 31
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As explained in the Fact Sheet: “EPA concludes that [it] is reasonable to look to the MSGP for guidance on determining appropriate monitoring requirements and limits for the proposed Russell Biomass facility. Therefore, EPA has added benchmark concentrations, monitoring, inspection and reporting requirements to the Draft Permit that are consistent with the MSGP. Specifically, EPA has determined the following technology-based requirements on a BPJ basis: (1) add monitoring with a benchmark concentration for iron based on the MSGP, Part 8, Subpart O – Steam Electric Generating Facilities; (2) add monitoring and benchmark concentration for total suspended solids based on the MSGP, Part 8, Subpart A – Timber Products, Subsector A3 – Log Storage and Handling; and (3) require the Permittee to develop, submit, annually update and implement its Storm Water Pollution Prevention Plan (SWPPP) for its storm water discharges.”

To verify that there are no toxic pesticides or herbicides discharged to the Westfield River in toxic amounts, the Final Permit requires the Permittee to monitor and report those parameters on EPA’s priority pollutants list, which can be found in Appendix A to 40 C.F.R. 423, and glyphosate within the second year and within the fifth year the facility is in operation. These years were chosen to provide information during relative “start up” activities and when the facility is well established, respectively, but prior to permit renewal. The monitoring information must be sent to EPA and Mass DEP within two months of sample collection. *See* Part I.A.4.h of the Final Permit. *Also see* Response to Comment IX.I.1.

H. Storm Water Pollution Prevention Plan (SWPPP)

Comment # VI.H.1	Commenter: 31
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“Part I.A.5(f) of the permit requires that the permittee take action if a failure to make a benchmark in one quarter means it is statistically impossible to meet the average for the year for that pollutant. Would it not be more protective of the resource if immediate action were required such as determining the reason for the failure to meet the benchmark and trying to remediate the problem should the effluent exceed the benchmark by a certain percentage (and, as written in the permit, not have to take action until the exceedance is so great it means the annual average can’t meet benchmark).”

Comment # VI.H.2	Commenter: 12
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“Page 8 of 15: Paragraph 5.f. This paragraph does not require the Permittee to take action until “four monitoring values for a parameter in any calendar year exceeds its benchmark concentration.” This

delay means that an entire year of overages can go by before the permittee is required to respond. This appears to be the case regardless how egregious the overages are, unless it appears that "an exceedance of the four quarter average in any year is mathematically certain." This standard should be tightened."

Response # VI.H.1-2

Commenter's: 12 and 31

EPA disagrees that Part I.A.5.f of the permit should be changed. This standard mirrors the language within the 2008 Final Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activities, Section 6.2.1.2, page 36. EPA believes this language is appropriate because it captures both slight exceedances (i.e., the Permittee takes action after the average of four monitoring values for a parameter in any calendar year exceeds its benchmark concentration) and exceedances that are egregious (i.e., the Permittee must take immediate action if the yearly average is mathematically certain).

Comment # VI.H.3

Commenter: 12

"Paragraph 5. g. A revision to the SWPPP should be required before "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" are made rather than 14 days after such changes. A predictable fish kill may occur during these 14 days that could have been avoided had the SWPPP been modified in advance of the changes."

Response# VI.H.3

Commenter: 12

EPA agrees and has made the following changes to Part I.A.5.g of the Final Permit:

"The Permittee shall amend and update the SWPPP ~~within~~ *no less than* 14 days ~~of~~ *prior to* any changes at the facility that *might* 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 *other* activities at the facility. *÷ The Permittee also shall amend and update the SWPPP within 14 days of* 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."

Comment # VI.H.4

Commenter: 31

"Part I.A.5 of the permit outlines the requirements for a Storm Water Pollution Prevention Plan (SWPPP). The draft permit requires that a SWPPP be completed within 90 days after the effective date of the permit. Because there are still many design details that have not been finalized, such as the selection of a boiler type and the proposed route of trafficking the fuel to the site, CRWC recommends that the SWPPP be due after 90 days of the site becoming operational. Otherwise, the SWPPP will not be specific enough."

Comment # VI.H.5

Commenter: 25

"The Draft NPDES Permit includes a requirement to develop a Stormwater Pollution Prevention Plan (SWPPP) for operation of the facility. Note that a separate SWPPP will also be required for

construction activities. While the requirement to prepare a SWPPP for facility operations is appropriate, the timeframe for developing and submitting the SWPPP is problematic. The SWPPP must be submitted within 90 days of the effective date of the permit. There is a significant amount of detailed facility data that will be needed to properly prepare the SWPPP, including how much of what materials will be stored on site, locations for such materials, staffing assignments for implementation of the SWPPP, etc. Because of the nature of the procurement for this project, it would be ineffective to develop a SWPPP at this time because the final design will be completed after the procurement process is complete. If one were developed now, substantial revisions would be required by the time the facility is operational. We recommend that the NPDES Permit be modified to clarify that construction activities will be covered under a separate construction SWPPP and to request that the submittal date for the operations SWPPP be changed to no less than 60 days before the facility becomes operational. At that time considerably greater detail will be available for a more comprehensive SWPPP to be developed.”

Response # VI.H.4-5	Commenter's: 25 and 31
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Response # VI.H.4-5	Commenter's: 25 and 31
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While EPA agrees that to comply with this provision, RB may develop and certify its SWPPP months or years prior to operating the plant, it should be noted that Part I.A.5.g also requires that upon any change at the facility that might affect the discharge of pollutants to the river, the permittee is required to amend, update and re-certify the SWPPP. Thus, the commenter's concern about plans changing during a long design and construction period are addressed with this SWPPP updating requirement.

Also note that storm water discharges from construction activities at the facility are required to be covered with a separate NPDES permit, either the Construction General Permit or an individual permit.

VII. EFH and ESA

A. EFH - Atlantic Salmon

Comment # VII.A.1	Commenter: 12
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“I’m the President of the Greater Boston Chapter of Trout Unlimited. Trout Unlimited, as I hope most of you know, is a conservation organization. Its mission is to conserve and protect North American cold-water fisheries and their watersheds and I’m here to speak in support of that mission as it applies to this project... the fact sheet that accompanies the draft permit, says that the Westfield River doesn’t qualify as essential fish habitat for purposes of your analysis. I think that’s an incorrect conclusion. I think it misreads the National Marine Fishery Service Regulations, and their definition of essential fish habitat for Atlantic salmon. I’m surprised at it, because even the project proponent has accepted that the Westfield River constitutes essential fish habitat for Atlantic salmon. At Page -- at the final environmental impact report at Page 6-26 it states: According to the National Marine Fishery Service, the Westfield River is designated as an essential fish habitat for the Atlantic salmon. And there’s no indication that the proponent has backed away from that, from that conclusion in the environmental, the final environmental impact report.”

Response # VII.A.1	Commenter: 12
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In the Fact Sheet, EPA erroneously determined that the site of the proposed Russell Biomass facility is not essential fish habitat (EFH) for Atlantic salmon. However, EPA, on page 48 of the Fact Sheet, presented an analysis of the potential for adverse environmental impacts from the facility on Atlantic salmon due to the known presence of fry and smolts from stocking efforts. EPA recognized that the Westfield River is EFH for Atlantic salmon and, on August 12, 2009, contacted the National Marine Fisheries Service (NMFS) and requested that they review the Draft Permit and Fact Sheet. NMFS responded to EPA’s request in a letter dated October 20, 2009. *See* RTC VII.A.2.

Comment # VII.A.2	Commenter: 12
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“What does that mean, to have this river treated as essential fish habitat? The Magnusson Stevens Act where that concept is developed, requires an agency that has some action to take that may effect the essential fish habitat is required to consult with the National Marine Fishery Service to get their comments back and, in particular, to get their conservation recommendations. And if those recommendations are not accepted, there’s a procedure for essentially going upstairs within both agencies to resolve differences. The other aspect of it, of the Magnuson Stevens Act that’s important from the regulation. The purpose of the consulting procedures is to promote the protection of EFH in the review of federal and state actions that may adversely effect EFH. It doesn’t require a showing that the federal action will definitely adversely effect. It says that it just may, a possibility that essential fish habitat may be affected. We’ve heard plenty here this evening that shows how fish habitat in this river for Atlantic salmon may well be affected.”

Response # VII.A.2	Commenter: 12
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On August 12, 2009 EPA contacted NMFS and requested that the agency review the Draft Permit and Fact Sheet, in particular, the analysis of adverse environmental impacts on Atlantic salmon presented on page 48 of the Fact Sheet. In their October 20, 2009 letter, NMFS confirmed that the Westfield River is EFH for Atlantic salmon. However, NMFS recognized EPA’s assessment of the potential adverse impacts on Atlantic salmon and concurred with EPA’s determination that this activity utilizes

the best available technology to minimize adverse impacts to aquatic resources, including Atlantic salmon. Further, NMFS provided no additional conservation recommendations per the EFH provisions of the Magnuson-Stevens Fisheries Conservation and Management Act and determined that their continued involvement in this permit process is not necessary. Therefore, an EFH consultation pursuant to the EFH provisions of the Magnuson-Stevens Fisheries Conservation and Management Act (50 CFR 600.920) was not initiated.

Comment # VII.A.3

Commenter: 12

“And the standards also say that the goal is to avoid harm to the fishery that's protected by the essential fish habitat designation. It's not to do a cost-benefit analysis and see whether the harm is worth paying money for and what the price should be. It is to avoid, just avoid that harm. And in this situation, and generally, just one more point, both the agency and Marine Fishery are required to use the best scientific information available, regarding the effects of the action on EFH, essential fish habitat, and the measures that can be taken to avoid, minimize or offset such effects. It starts out saying, avoid, and there's a way in this project that you can avoid a lot of the adverse effects of water discharge; and, that is, by going to a dry cooling process. And you discussed that in the Fact Sheet that accompanies the draft permit, and then you decide essentially that it's not worth the cost. Well, when you go to -- when essential fish habitat is involved, you can't, it's not a cost determination any more. And I urge you, when you do go and comply with the statute and obtain Marine Fishery's comments, I urge you to take a fresh look at all of your decisions that you made here. Look at it from the statutory perspective of the policy of the Magnuson Stevens Act and not lock yourself in just because you've issued a draft without that prior consultation.”

Response # VII.A.3

Commenter: 12

NMFS has, since the issuance of the Draft Permit, reviewed EPA's analysis and concurred with EPA's determination regarding adverse environmental impacts for Atlantic salmon (See RTC VII.A.2). Additionally, the purpose of the Magnuson-Stevens Fisheries Conservation and Management Act at 16 U.S.C. 1801 Sec.2(7) is “to promote the protection of essential fish habitat in the review of projects conducted under Federal permits, licenses, or other authorities, that affect or have the potential to affect such habitat.” The regulations pursuant to EFH at 50 CFR 600 Subpart J require that “to minimize, to the extent practicable, adverse effects to essential fish habitat caused by fishing activities.” (See 50 CFR §600.815(2)(ii)). This requirement is extended to non-fishing related activities that may adversely affect EFH in 50 CFR §600.815(4), including discharge and thermal additions. EPA determined that the proposed wet mechanical draft cooling towers is BTA under Section 316(b) of the Clean Water Act. NMFS concurred and has no additional conservation recommendations to provide per the EFH provisions of the Magnuson-Stevens Fisheries Conservation and Management Act. Further, the proposed technology satisfies the requirements of BTA for new facilities under the regulations addressing cooling water intake structures for new facilities at 40 CFR Part 125 (Phase I Rule).

Comment # VII.A.4

Commenter: 36

“As noted in the Fact Sheet, Atlantic salmon are stocked upstream of the site, and salmon smolts migrate through the project area on their way out to sea. These smolts are extremely rheotactic and will follow the main flow (which will be towards the intake of the hydropower station). Given the location of the Russell Biomass intake in relation to the forebay of the hydropower project, it is possible that fish following the flow of water could come in close proximity to the cooling water

intake screening (CWIS). While the screening size likely would preclude entrainment of Atlantic salmon smolts, they potentially could become impinged. The draft permit contains a condition requiring Russell Biomass to implement an impingement monitoring program (Condition IOB). The protocol calls for monthly cleaning of the CWIS, and enumeration of the number of fish impinged. If four or more fish are counted, daily monitoring would be initiated, and would continue until the number of fish impinged falls below four. We recommend increasing the frequency of monitoring to weekly during the smolt migration season (April 1 through June 15). Further, the permit should contain salmon-specific impingement limits similar to those set for the Vermont Yankee nuclear plant. Those limits are based on the equation contained in Attachment A (enclosed). If, during the term of the NPDES permit, no salmon are impinged, the salmon-specific monitoring requirements could be deleted from any future permits issued for the project.”

Response # VII.A.4	Commenter: 36
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See Response to Comment VIII.A.6.

Comment # VII.A.5	Commenter: 36
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“*Essential Fish Habitat* The Fact Sheet states that the Westfield River is not designated as essential fish habitat (EFH) by the National Oceanic and Atmospheric Administration (NOAA). However, according to information on NOAA Fisheries/Habitat Conservation Division’s website, it does appear that the Westfield River is EFH. Therefore, we recommend that you initiate consultation with NOAA and modify the draft permit, if necessary, to address any issues that arise from that consultation.”

Response # VII.A.5	Commenter: 36
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EPA recognizes that the Fact Sheet erroneously determined that the proposed site was not EFH for Atlantic salmon. EPA has consulted with NMFS regarding adverse environmental impacts to EFH for Atlantic salmon. See RTC VII.A.1 and VII.A.2.

Comment # VII.A.6	Commenter: 12
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“According to the fact sheet accompanying the NPDES draft permit, EPA has concluded that the Westfield River does not constitute “Essential Fish Habitat” for Atlantic salmon. That conclusion mis-reads the definition of essential fish habitat for Atlantic salmon as promulgated by the National Marine Fisheries Service (NMFS), a component of NOAA. This definition states that “essential fish habitat for Atlantic salmon is described as all waters currently or historically accessible to Atlantic salmon within the streams, rivers, lakes, ponds, wetlands and other water bodies of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut identified as EFH in figures 10.1 -- 10.3 and in the accompanying table.... NEFMC EFH Amendment, October 1998, www.nero.noaa.gov/hcdllist.htm Figures 10.1., and 10.3 all identify the Connecticut River. The definition goes on to say that “Atlantic salmon EFH includes all aquatic habitats in the watersheds of the identified rivers, including all tributaries, to the extent that they are currently or were historically accessible for salmon migration.” The Westfield River is a major tributary to the Connecticut River, and was “historically accessible for salmon migration.” Further, thanks to the region-wide Federal-State effort to restore Atlantic salmon to the Connecticut and its tributaries, Atlantic salmon parr currently use this section of the Westfield for their outward migration to the Atlantic Ocean. The project Proponent, Russell Biomass, has accepted that the Westfield River constitutes essential fish habitat for Atlantic salmon.” Essential Fish Habitat. According to the National Marine Fisheries Service (NMFS), the Westfield River is designated as Essential Fish Habitat (EFH) for the Atlantic salmon.” Final EIR, Sec. 6. ,

page 6 -- 26. The Proponent has given no indication that it disagrees with this conclusion. The fact sheet does not indicate that EPA ever discussed its legal interpretation with the cognizant agency with the National Marine Fisheries Service, the agency within the Department of Commerce that promulgated the EFH regulation. It is time now to cure this failure of communication. EPA should now proceed to consult with the National Marine Fisheries Service, obtain NMFS's comments and EFH Conservation Recommendations, and respond in writing to those comments. 50 CFR 600.905(b). EPA should then provide a new opportunity for public comment once it revises its draft NPDES to reflect NMFS's comments."

Response # VII.A.6	Commenter: 12
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Although the Fact Sheet incorrectly determined that the Westfield River at Russell Biomass was not EFH for Atlantic salmon, EPA did assess the potential for adverse environmental impacts to Atlantic salmon present in the Westfield River on page 48 of the Fact Sheet. NMFS review was requested following issuance of the Draft Permit. See RTC VII.A.1 and VII.A.2. Given that NMFS concurred with EPA's determination that the Draft Permit utilizes BTA to minimize adverse environmental impacts and provided no additional comments, a new opportunity for public comment is not required.

Comment # VII.A.7	Commenter: 12
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"The fact sheet accompanying the draft NPDES states that EPA's decisions relating to the thermal discharges from this proposed power plant were made on a "BPJ" (Best Professional Judgment) basis, due to the lack of directly applicable thermal discharge standards. In this circumstance, the EFH regulations direction to both the action agency and the National Marine Fisheries Service to use the "best available information" is relevant: "The Federal agency and NMFS must use the best scientific information available regarding the effects of the action on EFH and the measures that can be taken to avoid, minimize, or offset such effects. " sec. 600.920(d). This draft permit has not had the benefit of NMFS consultation, including that agency's connections to relevant sources of "the best scientific information."

Response # VII.A.7	Commenter: 12
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Although the Fact Sheet incorrectly determined that the Westfield River at Russell Biomass was not EFH for Atlantic salmon, NMFS review was requested following issuance of the Draft Permit. See RTC VII.A.1 and VII.A.2. The technology-based thermal limit in the Final Permit is based on EPA's best professional judgment (BPJ) in the absence of effluent limitation guidelines (ELGs). The expected rise in temperature under this thermal limit is more stringent than either than warm water (5°F) or cold water (3°F) temperature rise allowed by MA surface water quality standards (314 CMR 4.05(3)(b)(2)(a)). NMFS concurrence with EPA's analysis of the impacts of the proposed facility on EFH confirms that the agency was satisfied that EPA used the best available scientific information in setting thermal limits.

Comment # VII.A.8	Commenter: 12
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"But resort to specialized scientific information may be unnecessary in this case. The fact statement accompanying the draft NPDES identifies an available technology that uses no, or virtually no, cooling water at all -- dry cooling towers. This technology would do away with thermal discharges into the Westfield River, as well as discharges of other effluents, including phosphorus, chlorine, and various metals. It would also avoid the need to withdraw 880 000 gallons per day from the River. In

other words, technology is available to avoid adverse impacts on EFH. This is the standard required under the Magnuson-Stevens Act.”

Response # VII.A.8	Commenter: 12
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Both EPA and NMFS agreed that the proposed wet mechanical draft cooling towers would effectively minimize adverse environmental impacts on EFH in the Westfield River. Further, the proposed technology satisfies the requirements of BTA for new facilities under the regulations addressing cooling water intake structures for new facilities at 40 CFR Part 125 (Phase I Rule). See RTC in Sections V, VI, and VIII for further information regarding the selection of effluent limitations and CWIS requirements.

Comment # VII.A.9	Commenter: 12
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“As discussed below, EPA's reliance on standard formulas to model thermal effluent discharges in particularly hot, low-flow summer months in this river is not warranted. EPA's fact sheet states that the agency has "designed the Draft Permit's thermal discharge limits to assure that the river in-stream temperatures are not materially increased by the Russell Biomass discharge." Fact sheet at pp. 25 -- 26 of 52. The Magnuson-Stevens act does not require a showing of "material" harm to EFH to trigger agency' responsibilities to protect EFH. EPA's approach here is not consistent with the purpose of the Magnuson-Stevens Act: "The purpose of these (Magnuson-Stevens Act) procedures is to promote the protection of EFH in the review of Federal and state actions that may adversely affect EFH." 50 CFR sec. 900. 905(a). The Act requires the balance to be drawn in favor of protecting EFH, and the fish, not the Developers pocketbook.

The temperatures that are being discussed in connection with thermal discharges are at the upper limit of survivability for Atlantic salmon and for other trout species more generally. According to the NMFS' description of essential fish habitat for Atlantic salmon, parr (juvenile salmon under one year) live at water temperatures of 25°C and below. A 1973 study reports that the upper lethal temperature for "large parr" Atlantic salmon is 27.5°C using a testing protocol that raised water temperature very gradually (0.5°C every 10 hours), and also maintained ideal water aeration and food supply conditions. Garside, Ultimate upper lethal temperature of Atlantic salmon, 51 Can. J. Zool. , 898 (1973). In the real world, however, water temperature fluctuations can occur abruptly, such that the fish do not have a gradual opportunity to acclimate themselves to the changes. A 2008 study concluded that water temperatures within localized basins on the Connecticut River vary in temperature, and that daily and even hourly temperature readings showed extreme values not reflected in the "seasonal means." The study also emphasized the need to consider the "synergistic effects" of other stressors that fish encounter in the field as well as the complexity associated with cycling temperatures and thermal refuges. Mather, et al., Summer temperature variation and implications for juvenile Atlantic salmon, 603 Hydrobiologia 183 (2008). A similar conclusion was reached as to the effects of temperature fluctuation on distribution of Brooktrout and brown trout in Michigan and Wisconsin streams. Wehrly, K.et al., Field-based estimates of thermal tolerance limits for trout: incorporating exposure time and temperature fluctuation, 136 Transactions of the American Fisheries Society 365-374 (2007). Because we are concerned with temperature changes at the margin of survivability, it is especially important to err on the side of caution, by protecting EFH, rather than cost-saving. The review standard should not be how can we minimize harm, or how can we keep the developer s cost down, but rather how can we avoid harm to the fish being protected by the essential fish habitat designation.”

Response # VII.A.9	Commenter: 12
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The regulations pursuant to EFH at 50 CFR 600 Subpart J require that adverse environmental impacts be minimized to the extent practicable. In this case, EPA demonstrated that the thermal discharge limits in the Draft Permit will increase temperatures in the Westfield River a maximum of 0.3°F based on the lowest recorded flow (13.2 cfs), maximum discharge temperature, and ambient instream temperature of 68°F (Attachment B, Case 5), while impacts at temperatures approaching those referenced in the comment (25 – 27.5°C) are expected to be less (approximately 0.03°F or less; Attachment B, Case 1). At the highest possible temperature rise at the plant (53°F), the rise in temperature in the river is expected to be approximately 0.6°F (Attachment B, Case 3). See Response to Comment V.A.6-7. EPA determined that this minimal increase in river temperatures will not adversely impact Atlantic salmon.

The instantaneous maximum temperature limit for the discharge is 85°F. This means that at no time may the facility discharge at temperatures exceeding 85°F. However, the final discharge temperature is affected by the temperature of the cooling water and air temperature, and will regularly be less than 85°F. Once the effluent mixes with the receiving water, the temperature will rapidly cool as the effluent and receiving water combine. Thus, although 85°F may be the upper limit of survivability for Atlantic salmon and other salmonids, the temperature of the effluent will be less than 85°F when it mixes with the receiving water. Additionally, the effluent is not expected to cause the river temperature to rise more than 0.6°F even under worst-case conditions (Attachment B). *See* RTC V.A.6-7 and IV.E.1-7.

The EFH regulations at 50 CFR 600 Subpart J ensure that fish protected by EFH are not harmed through minimization of adverse impacts. Both EPA and NMFS have determined that the requirements and limits of the Draft Permit ensure that adverse impacts to aquatic resources, including Atlantic salmon, are minimized. EPA based its determination on the dilution of the effluent, analysis of available technologies, and potential to exceed water quality standards.

Comment # VII.A.10	Commenter: 12
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“Most of the thermal-related analysis that EPA relies on is based on consideration of average temperatures -- 7Q10 calculations (lowest consecutive seven-day streamflow in a 10 year period), monthly median flows. Salmon parr don’t live or die based on average temperatures. The short-term ups and downs in temperature at the margin of survival are what matter to the juvenile salmon in the river, along with the presence of other effluents that harm fish. These changes at the margin occur especially during warm summer months when river flows are naturally reduced, even before the added burden of 800,000 gallon withdrawals daily. Variations in the receiving waters temperature, compounded by the additional burden of thermal discharges (and fluctuations in the temperature and volume of such discharges) from the proposed power plant, may just prove fatal to the salmon parr will we are trying to protect and foster. This is an area where the professional judgment of scientific experts in fish biology are necessary, and they should be called upon for assistance. (Expertise is locally available -- the Connecticut River study cited above was performed by researchers from within New England.”

Response # VII.A.10	Commenter: 12
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EPA is aware that average temperatures do not reflect the day-to-day variations in the river which may, at times, increase the potential for adverse impacts to aquatic life. For this reason, the effluent calculations in the Draft Permit were based on worst-case conditions, rather than averages. The 7Q10 low flow statistic is defined as the annual minimum average 7-consecutive-day streamflow that has an annual non-exceedence probability of 0.10, or that is expected not to be exceeded in 1 of 10 years (Flynn 2003, USGS Water Resources Investigations Report 03-4023). The 7Q10 low flow statistic is widely used for managing water quality (Technical Support Document for Water Quality-based Toxics Control, EPA 1991). The 7Q10 low flow is biologically relevant because it represents a sustained low flow, which organisms are subject to for seven days. A value such as minimum recorded flow might represent only a pulse of low flow, from which organisms may quickly recover. See RTC V.A.6-7 and IV.E.1-8.

EPA calculated the change in river temperature downstream of the outfall using the average summer river temperature (73°F), maximum recorded river temperature (82°F) based on a historic record spanning over 40 years, and the instream temperature for cold water fish based on Massachusetts water quality standards (WQS). EPA believes that 7Q10 flow and the maximum recorded temperature based on over 70 years of data are the best available data to approximate worst-case conditions for this facility. Nonetheless, EPA calculated that even at the lowest recorded flow (13.2 cfs which occurred prior to regulation of streamflow by the Knightville dam), the increase in ambient temperature due to the thermal discharge would be less than 0.3°F (Attachment B, Case 5). See RTC V.A.6-7 and V.A.8.

Comment # VII.A.11	Commenter: 36
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“However, notwithstanding these beneficial aspects of the permit, the U.S. Fish and Wildlife Service does have concerns with potential impacts to migratory species of fish, particularly Atlantic salmon. The Westfield River is extremely important to the Atlantic salmon restoration effort within the Connecticut River watershed. All of the hydropower projects on the river have measures in place to protect migrating salmon, and new projects are required to monitor the effectiveness of those measures. Requiring protection measures and monitoring at power plants that influence in-river conditions is necessary in order to ensure that the cumulative impact of the projects does not hinder restoration goals.”

Response # VII.A.11	Commenter: 36
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EPA agrees that protection measures and monitoring is necessary to ensure that the cumulative impact of the projects is compatible with restoration goals. To this end, EPA has required the Permittee to maintain best technology available at the cooling water intake structure, submit monthly monitoring reports for each outfall, conduct impingement and entrainment monitoring at the CWIS for the life of the permit, and perform a thermal plume characterization study to confirm that the surface water quality standards are met.

Comment # VII.A.12	Commenter: 36
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“The Fact Sheet states that the Westfield River is not designated as essential fish habitat (EFH) by the National Oceanic and Atmospheric Administration (NOAA). However, according to information on NOAA Fisheries/Habitat Conservation Division’s website, it does appear that the Westfield River is EFH. Therefore, we recommend that you initiate consultation with NOAA and modify the draft permit, if necessary, to address any issues that arise from that consultation.”

Response # VII.A.12

Commenter: 36

Although the Fact Sheet erroneously determined that the Westfield River was not EFH for Atlantic salmon, NMFS was consulted during the public comment period. *See* RTC VII.A.1 and VII.A.2.

Comment # VII.A.13

Commenter: 27

“EPA also made a significant error in its Fact Sheet by declaring at page 48 that the Westfield is not considered Essential Fish Habitat by the National Marine Fisheries Service (NMFS). In fact, the entire Westfield is considered EFH by NMFS for Atlantic salmon, and for American eels or elvers. This is acknowledged by the proponents in the FEIR (at section 6 between pages 6-26 and 6-28), and by the NMFS itself under its own designations. The significance of the EFH designation will be discussed below.”

Response # VII.A.13

Commenter: 27

EPA recognized this error and solicited comments from NMFS following issuance of the Draft Permit. *See* RTC VII.A.2. EFH is only designated for those species for which a fishery management plan exists (*See* 50 CFR §600.815(b)(1)). American eel is not covered under a fishery management plan, therefore, no EFH has been designated for this species. However, regardless of EFH designation, EPA considered the protection of all aquatic species in the Draft Permit, including American eels.

Comment # VII.A.14

Commenter: 27

“The EPA Fact Sheet and the conclusions therein, mimic the evaluation of the analysis and conclusions developed by MA DEP in the water withdrawal permit issued earlier this year, and the presentation of the proponents in the FEIR and the DEIR. In those two documents, the proponents minimize the impact of their discharges by describing the section of river near where the plant will be located as used by migratory coldwater species, Atlantic salmon. They talk about the fact that this migration is limited in duration, and usually occurs during the spring of the year on the high water events of spring rains, and snowmelt.

In point of fact, this characterization by both the state and the proponents is completely wrong. Atlantic salmon are in the river, and use the river 12 months of the year, including the section of river near where the plant will be located. Further, both wild brown trout, stocked brook, rainbow and brown trout, and American eels or elvers, use this section of the river.”

Comment # VII.A.15

Commenter: 27

“How Atlantic Salmon Use the Westfield

Meanwhile, I think it of the utmost importance to provide a description of how Atlantic salmon use the entire Westfield River, which joins the Connecticut in West Springfield approximately 15 miles below the site of the proposed biomass plant.

There has been an ongoing restoration program for Atlantic salmon since 1967, involving the USFWS, National Marine Fisheries Service (NMFS) and four New England States (Massachusetts, Connecticut, Vermont and New Hampshire). Since that time, roughly \$600 million in federal funds have been expended towards this restoration.

The Connecticut River Salmon Commission considers the Atlantic salmon to be restored in the Connecticut River watershed, including the Westfield River, one of the principal tributaries of the

Connecticut, because there are now adult salmon returning every year to the watershed as the result of the restoration program. This program involves the stocking of more than 8 million salmon fry every year in tributaries of the Connecticut. Some 800,000 fry are stocked in the Westfield and 22 of its tributaries every year.

Fry are fingerling juvenile salmon which become parr as they get larger. The parr will spend a year or two in the river before migrating to sea as smolts. In addition to the fry, there are numbers of smolt stocked directly in the Westfield, and other portions of the Connecticut River watershed. According to statistics provided by the restoration program, the Westfield is one of the primary tributaries of the Connecticut in regard to the restoration program. It has the fourth largest amount of salmon habitat of 39 major tributaries to the Connecticut.

In 2008, 34 adult salmon migrated to the first dam on the river in West Springfield. These fish were trapped and trucked to the federal fish hatchery for use in the spawning efforts. Eggs from these fish are used to create the fry that are stocked each year. One of the measures of the success of this multi-state and multi-agency program is the development of salmon that have a distinct genetic marker to the particular river they were stocked in.

This is a significant accomplishment given the fact that wild, native Atlantic salmon were extirpated from the Connecticut river in the late 1700s, as the result of increased industrialization in New England. When dams built on the mainstem of the Connecticut blocked the fish from reaching upstream spawning habitat, the fish disappeared.

During the life cycle of the Atlantic salmon, the fish will utilize the river differently at different times of the year. They will, however, use the river 12 months out the year. How they use the river will depend on their particular needs and the impact of the changing seasons on the aquatic environment.

Adult Atlantic salmon spawn in October and November. They migrate from the sea starting in April or May, and will gradually make their way up river over the course of the late spring and summer, to the spawning grounds. Depending on the water temperature and level, adult fish will also migrate downstream, and some will leave the river and go back to the sea, if close enough, or to the main stem of a larger river. The migration up river is usually gradual and staged. Sometimes though, depending on conditions, the salmon will move quickly through the river system to reach the spawning grounds. The migration is spread out by nature so that the entire population of fish cannot be wiped out in any given year by extreme environmental conditions, such as flood, or drought, or unusually low, hot water.

Mature salmon are capable of swimming great distances in a short period of time, and overcoming significant natural barriers, such as falls. Their name suggests this. *Salmo salar* means, "the leaper."

Once the eggs have hatched, the juvenile fish will hide in the rocks and cobble of the river bottom, feeding and hiding from predators, and overwintering in the stream. The mature salmon will overwinter, or drop back to the sea. Which choice they make depends on a variety of factors. Larger fish, those that have spent three or more winters at sea, are the most likely to leave the river, because they need deep water pools to protect themselves from a harsh winter. There is less habitat available to provide shelter for these large fish.

Atlantic salmon, unlike Pacific salmon, will not feed as they enter the river. When they drop back to the sea, they will feed voraciously on any predator species available, including smelts, elvers and most likely juvenile herring.

Juvenile salmon will pass from the fry or fingerling stage to become parr, which are usually three to four inches long. The parr will spend one to two years in fresh water before migrating to the

sea as smolts. Whether the parr spend a year or two years in the river before undergoing a change in their body physiology and migrating depends on a variety of environmental factors that will influence their growth rate, such as water temperatures and available food supply.

The smolt migration typically takes place in the mid to late spring, on the flush in water levels which arise from spring runoff and storms.

Parr will move around the river, upstream or down, at various times of the year, to maximize use of all available habitat. The movements again will be dictated by water levels and temperature, and available food sources. The parr will utilize all available habitat in the Westfield river and its tributaries.

The factual basis upon which the Draft Authorization was granted is incomplete without the inclusion of such information on how this coldwater, migratory species actually uses the river. Furthermore, some mention also must be made of the manner in which the Atlantic salmon will use the river under varying conditions, particularly low warm water during the summertime. Finally, the presence of dams on the river must also be mentioned to provide a factual reference point for how these fish use the entire river.

All Atlantic salmon in the various stages of life after the eggs have hatched are territorial. All seek to find locations in the river that optimize the chances for survival. That means the fish will seek out at various times of the day and year, sections of the river that provide them the greatest protection from predators, flow rates that best meet their biological requirements, temperature levels in the river that do the same, and areas where there are good food sources.

During periods of hot and low water, juvenile salmon, and adult salmon as well if they are in the river, will seek out sources of cold water, which is more highly oxygenated than warmer water. They will tuck themselves into the smallest of spring seeps or coldwater brooks, to get into the flow of coldwater. Thus, the large riffle described in the FEIR and the DEIR which starts about 500 feet below the dam and runs for another 350 feet before taking a large dog leg to the left, is ideal habitat for Atlantic salmon during low, warm water periods of the summer.

I think it is also important to note that on the west side of the river, about 850 feet below the Indian River Hydro dam, there is a coldwater spring which has not been described on any map or diagram presented as part of the factual foundation for this permit. This is the type of refuge area that will attract coldwater species in the hot, low water episodes of the summer.

Further, salmon will tend to migrate significant distances to find the thermal refuge they need to survive. Their current state of affairs on the Westfield is not ideal for the ability of Atlantic salmon to do this. There are four dams on the mainstem of the Westfield, one (Waranoco) located approximately 2 ½ miles below the proposed biomass plant, one located right at the site, and another (Texon) located approximately two miles above the Indian River Hydro. There is another at West Springfield, where the Westfield joins the Connecticut 15 miles below the proposed plant location. Further, the Middle and East branches of the Westfield have Army Corps of Engineer Flood Control dams located on them, approximately five miles above the proposed biomass plant.

Both Indian River and Texon are considered run of the river dams, which means when they are both operating (Indian River is not a functioning hydro operation at this time). There has been a request made by the owners of that facility to the Federal Energy Regulatory Commission (FERC) to allow them to operate the dam again as a power generating source. That request is still pending, meaning there is no holding back and then releasing of water by the dams as part of the power generation process.

Nevertheless, these two dams, and the Waranoco dam below, have ponds created behind the dams which in the summer time will serve to artificially heat the water. Each of the head ponds is at

least several hundred yards long. Also, these dams block migratory species such as the Atlantic salmon from moving freely up and down the river, limiting their access to coldwater tributaries such as Bradley Brook, located 50 yards above the Indian River Hydro Dam on the west side of the river.

These dams generate very little energy, and serve to add to the degraded quality of the Westfield by blocking the free flow of migratory coldwater species, and artificially heating the river water. Long term, one of the goals of the restoration effort for the Atlantic salmon on the Westfield is to remove such impediments to the free movement of coldwater species.

The adult salmon that do return to the Westfield do not have a run of the river. They are trapped at the dam in West Springfield, and used as broodstock for the restoration efforts. A certain percentage of these fish are trucked up above the dams on the Middle and East branches and released. The ultimate goal of the restoration effort is to allow for these fish to have run of the river.”

Response # VII.A.14-15	Commenter: 27
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Nowhere in the Fact Sheet does EPA imply that the discharge’s impacts on Atlantic salmon would be minimized because “migration is limited in duration, and usually occurs during the spring of the year on the high water events of spring rains, and snowmelt.” In fact, the limits in the Draft Permit were calculated using severe low flows and a range of temperatures (e.g., maximum recorded summer temperature, average summer temperature, maximum daily temperature for cold water fishery based on WQS) specifically to ensure that all life stages of salmon would be protected year-round. The analysis provided in the Fact Sheet assumed that Atlantic salmon would experience summer low flows and high temperatures, and ensures that fish would be protected from harmful conditions during this time. In the Responses to Comments in Section V, EPA demonstrated that the thermal input from the facility will increase the ambient temperature less than 0.3°F even at the lowest recorded flow and less than 0.6°F under the worst-case conditions at 7Q10 flow (Attachment B, Case 5 and Case 3), and that the dilution is sufficient that no mixing zone is granted in the Final Permit. See RTC V.A.6-7, V.C.2-7, and IV.A.6-7. Both the riffle downstream of the discharge and any cold water spring downstream of the discharge will not be influenced by the facility’s discharge and will be maintained to protect cold water populations in the Westfield River.

Comment # VII.A.16	Commenter: 27
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“Essential Fish Habitat

At page 48 of the Fact Sheet, EPA wrongly concludes that the Westfield River is not Essential Fish Habitat for Atlantic salmon. The entire Westfield, not just the coldwater sections as defined by MA DEP, is considered EFH under National Marine Fisheries Service regulations. (50 CFR Part 600) (also see the attached documentation, reports to congress for 2005 and 2008, and EFH definitions and descriptions provided in response to the 1999 requirements of NMFS to define EFH). It is important to note here, that USFWS has posted signs up and down the length of the entire river advising anglers of the difference between brown trout and juvenile Atlantic salmon. Clearly USFWS takes the position that the entire river is Atlantic salmon habitat.

Further, the Westfield may be EFH for American eels, and potentially for both shad and herring. This commentary will focus on Atlantic salmon only. EPA needs to make a determination as to the status of the Westfield on these other species, and conduct the appropriate analysis of the impact on these other species if the Westfield is considered to be EFH for them.

Subpart K of the regulations covering EFH describe how all federal agencies are to coordinate with NOAA’s National Marine Fisheries Service “on all actions or proposed actions authorized, funded or undertaken by the agency that may adversely affect EFH. 50 CFR 600.905(b)(2). Adverse

effect means any “impact that reduces quality and or quantity of EFH.” 50 CFR 600.910 (a). For any federal action that may adversely affect EFH, federal agencies must provide NMFS a written assessment of the effects of that action on EFP. 50 CFR 600.920 (e)(1).

A federal agency may avoid preparation of an assessment only if it determines that the proposed action “would not adversely affect EFH.” Id. A federal agency may not avoid the Act’s consultation and assessment requirements by characterizing impacts as insubstantial or minimal.

EPA has completely failed in issuing this Draft Authorization to follow the requirements of these federal regulations. In fact, EPA has gone a step further than both the data presented by the proponents of the plant in the FEIR, where in Section 6.10 they discuss the application of the Act’s EFH provisions. The FEIR wrongly concludes that potential adverse impacts to EFH will be minimal. FEIR at p. 6-27.

Similarly, in granting the water withdrawal permit under state law, DEP’s analysis regarding EFH mimics that of the proponents in the FEIR.

Under both federal law and regulation, given the fact the entire Westfield, not just the limited section of the river adjacent to the proposed biomass plant, is considered EFH, EPA is required to conduct the analysis described in the regulations. The Council believes, for the reasons stated above, the proposed plant is an adverse impact to EFH for Atlantic salmon. The Council also believes that there can be no safe minimization of this impact on the habitat given the extent of the water withdrawals by Russell Biomass, and the plume of hot water that will be pumped into the river, 24 hours a day, particularly during the hot months of summer, at low water.

Further, the regulatory scheme adopted by the state of Massachusetts which segments Westfield into sections and describes the section adjacent to the proposed biomass plant as a Class B warm water fishery, is inimical to the requirement of the EFH regulations which requires EPA to evaluate the impact of the proposed action, in this case the discharge permit approval, on the entire river.

NMFS EFH documentation describes ideal habitat for Atlantic salmon. Included in those materials is the ideal flow rate for the fish, which it lists as a minimum of 95 cfs. The minimal flow rates which are allowed under the permit are nearly four times lower than that amount at the time of year these fish are the most vulnerable, the hot summer months.

In its analysis, EPA accepts the use of average temperature data in the form of 7Q10 data to make a determination as to the lowest minimal flow that will exist on the river. This analysis too is flawed. Atlantic salmon, or any other coldwater species, do not live in a world of average flows. They live in the world of what is happening now, at any given point in time on the river. To the extent the flow rates fall below those averages, particularly in the hot days of summer, the adverse impact by the plume of hot water released by the plant will be intensified.”

Response # VII.A.16	Commenter: 27
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Regarding the EFH determination for Atlantic salmon and the fulfillment of consultation requirements pursuant to EFH regulations, see RTC VII.A.2.

EFH is only designated for those species for which a federal fishery management plan exists (See 50 CFR §600.815(b)(1)). Neither American eel nor American shad are covered under federal fishery management plans; therefore, no EFH has been designated for these species. However, regardless of EFH designation, EPA considered the protection of all aquatic species in the Final Permit, including American eels, river herring, and American shad. Responses to Comment V.C.2-7 demonstrates that, while this reach of the Westfield River is classified as a warm water fishery by the State,

MassWildlife has designated it a cold water fishery resource, and as such, cold water fish populations are considered an existing use and must be maintained under Massachusetts Antidegradation Provisions at 314 CMR 4.04.

EPA did not use only average temperature or average flow data in its analysis. EPA considered both average summer and maximum recorded temperatures (at the thermal tolerance limit for Atlantic salmon in its analysis of temperature in the Fact Sheet (p. 26-27). All of the effluent calculations based on dilution or mixing were estimated using the 7Q10 low flow statistic, which is widely used to represent low flow in water quality determinations. In this Response to Comments, EPA evaluated projected temperature increases based on a more conservative 7Q10 flow and at the lowest recorded flow, and also evaluated thermal impacts at water temperatures protective of cold water fisheries under WQS (68°F) where impacts from the thermal discharge are expected to increase the ambient temperature a maximum of 0.3°F (Attachment B, Case 5). See RTC V.A.6-7, V.C.2-7, and VII.A.10.

Comment # VII.A.17	Commenter: 27
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“The calculations included in EPA’s Fact Sheet show that the maximum water temperature that will be allowed out of the discharge pipe will be 85 degrees. The Fact Sheet concludes that because the flow coming into the Westfield at that point is so small (not to exceed 110 gallons per minute) and is such a small percentage of even the minimum average flow, there will be no significant thermal impact from the discharge even during the low, hot water periods of the summertime.

The Council believes this analysis is seriously flawed. To reach those conclusions, EPA uses average temperature data. Second, the 85 degree water temperature allowed is based on the state’s warm water fisheries standard (maximum 83 degrees F) despite the fact the state itself (and EPA) acknowledges the presence of coldwater species, and Atlantic salmon parr and fry. It is a violation of both state anti-degradation standards and the CWA to apply this warm water standard to the discharge rather than the coldwater standard (68 degrees F).”

Response # VII.A.17	Commenter: 27
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EPA used both average summer temperature and maximum recorded temperatures in the delta T calculations to determine the potential impact of the thermal discharge on ambient river temperatures (Fact Sheet p. 26). Also see RTC V.A.6-7, V.C.2-7, and VII.A.10. The instantaneous maximum temperature limit of 85°F is a technology-based standard calculated from the technological performance of the proposed wet mechanical draft cooling towers.

EPA estimated severe ambient conditions based on the maximum recorded river temperature and 7Q10 low flow statistic (calculated from more than 40 years of recorded data) and determined that the thermal discharge at 85°F would increase the river temperature no more than 0.03°F (Attachment B, Case 1). Even at the highest allowable rise in effluent temperature (53°F), the discharge is expected to increase the river temperature less than 0.6°F (Attachment B, Case 3).

EPA specifically did not use water quality standards to ensure protection of the cold water species present in this reach of the river. The cold water fishery requirements in the surface water quality standards are not applicable to this reach of the Westfield River. A cold water fishery is defined at 310 CMR 4.02 as

Waters in which the mean of the maximum daily temperature over a seven day period generally does not exceed 68°F (20°C) and, when other ecological factors are favorable (such as habitat), are capable of supporting a year-round population of cold water stenothermal aquatic life such as trout (salmonidae).

This reach of the Westfield River regularly exceeds a maximum daily temperature of 68°F over a seven day period during the summer, even though it supports a year-round population of cold water aquatic life. Both conditions must be met in order to meet the requirements of a cold water fishery. Because the Westfield River ambient temperature exceeds the threshold, it is designated as a warm water fishery. EPA cannot require the facility to meet a water quality standard that the river cannot naturally meet. In essence, EPA would be requiring the facility to cool the ambient temperature of the river.

Nonetheless, the expected rise in river temperatures with the technology-based thermal limit in the Final Permit are more stringent than the rise in temperature that would be allowed under WQS for either cold or warm water fisheries. As stated above, the technology-based limit is expected to increase ambient temperatures at severe low flows between 0° and 0.6°F (Attachment B). In contrast, WQS at 314 CMR 4.05(3)(b)(2) would allow the instream temperature to increase by 5°F for a warm water fishery and 3°F for a cold water fishery due to a thermal effluent.

Comment # VII.A.18	Commenter: 27
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“Further, given the fact that the Westfield is EFH for Atlantic salmon and other species, application of this warm water temperature limit of 83 degrees is a violation of the Magnusson-Stevens Act requirements to protect species for which the river is determined to be EFH.

In regard to this EFH, that riffle area below the discharge pipe is the exact type of habitat that Atlantic salmon will gravitate to during warm, low water events, because the broken water of the riffle is more highly oxygenated than surrounding waters. The broken water also provides protection from predators during low water periods. In point of fact, EPA is allowing a hot water discharge into the most sensitive of the EFH for Atlantic salmon adjacent to the proposed plant.”

Response # VII.A.18	Commenter: 27
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The instantaneous maximum temperature limit in the Draft Permit is based on the proposed cooling technology (See RTC V.C.2-7 and VII.A.17). EPA recognizes that the riffle downstream of the discharge may provide habitat for fish populations, including Atlantic salmon. Nonetheless, EPA has estimated, based on conservative stream flows, that the effluent would increase the temperature less than 0.3°F during summer temperatures and low flow conditions, and would increase the temperature less than 0.6°F under worst-case conditions (Attachment B). As such, EPA concludes that the limits included in the Final Permit will be protective of existing uses, including habitat for cold water fish populations. See RTC V.A.6-7, V.C.2-7.

Comment # VII.A.19	Commenter: 27
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“Several other facts regarding the functioning of the river and the structure of the mixing zone at the location are relevant.

In a healthy river where Atlantic salmon are found, there is a natural thermostat with the setting sun each day. The cooler nighttime temperatures will drop the river temperatures generally. The drop can be restricted when there are dams on the river, and head ponds which artificially heat

the surface water temperatures. Note, that is the case on the Westfield, and all the dams are top release structures, meaning the water which flows downstream comes from the top of the dam, with the water heated during the day, rather than from the bottom, where cooler water collects.

Even in situations where there are dams as on the Westfield, there will still be a cooling impact from lower nighttime temperatures. The range of that drop in temperature can be dramatic. On rivers without dams, the daily increase in water temperature can be 10 to 12 degrees F. It would likely be less dramatic on the Westfield. The whole point of the commentary is to show that there is a natural cooling mechanism in the river that provides a layer of protection for coldwater species like Atlantic salmon.

That mechanism is destroyed when there is a discharge that runs 24 hours a day, at a constant 85 degrees. That 85 degrees is at the point of lethal range for salmon, and at or above the lethal range for most trout species.”

Response # VII.A.19	Commenter: 27
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The instantaneous maximum temperature limit must be met at the monitoring point upstream of the outfall. In addition, the final discharge temperature is affected by the temperature of the cooling water and air temperature, and will regularly be less than 85°F.

Finally, when the effluent mixes with the receiving water the temperature of the combined streams is estimated to increase by less than 0.03°F at the maximum recorded summer temperatures and conservative 7Q10 flow (Attachment B, Case 1). Thus, while the maximum temperature limit of 85°F approaches the lethal range for salmon, aquatic life in the river will not be exposed to such high temperatures due to mixing of the effluent stream in the river. In fact, EPA estimates that temperatures in the river as a result of the heated effluent are not likely to increase more than 0.03°F at 7Q10 flows and less than 0.3°F even at the lowest recorded flow and at a more conservative ambient temperature of 68°F (Attachment B, Case 1 and 5). Also see RTC V.A.6-7, V.C.2-7, IV.E.1-7, and VII.A.9.

Comment # VII.A.20	Commenter: 27
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“The Council is taken aback by the fact that EPA made a finding the Westfield is not EFH for Atlantic salmon, despite the fact the proponents acknowledge that very same in its FEIR and DEIR. (FEIR Section 6, pages 6-26 to 6-28) It is possible that there can be adverse inferences drawn over the inability of one of the primary federal environmental regulatory agencies, presumably with significant experience evaluating New England rivers with coldwater species, from missing such an obvious, and essential fact in doing a critical analysis for a case of first impression with an NPDES permit for a biomass plant. It has been reported that during the hearing in Russell, when the issue of EFH was raised, one EPA staffer commented that they were not aware the Westfield was in fact a tributary of the Connecticut. If true, the comment is astounding to the point of disbelief.

This lack of acknowledgement of EFH status for the Westfield, and the commentary about lack of knowledge of the Westfield as a tributary of the Connecticut, creates the appearance that EPA has been swayed by the enormous political groundswell created favoring renewable energy in general, and the favorable treatment given to biomass plants in the recent Waxman-Markey energy bill. Even if that is not in fact the case, this appearance undermines the confidence in the independence and integrity of EPA’s review of such projects politically favored projects.

There is an impression created from the perspective of the Council, that EPA has relied too heavily on the state of Massachusetts in forming its judgments, and has relied too heavily on the analysis and conclusions of both the state and the proponents in reaching its conclusions.”

Response # VII.A.20	Commenter: 27
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Although the Fact Sheet erroneously determined that the Westfield River is not EFH for Atlantic salmon, EPA did consult with NMFS during the public comment period. See RTC VII.A.1 and VII.A.2 regarding the EFH designation for the Westfield River.

Comment # VII.A.21	Commenter: 27
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“Global Warming

There was no mention in the permit or the Fact Sheet on the impact of global warming on the Atlantic salmon or other coldwater species, or how over the next 30 years the discharge of hot water into the Westfield will impact these fish.”

Response # VII.A.21	Commenter: 27
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EPA used estimated severe low flow conditions (7Q10 and lowest recorded flow) in the calculation of effluent limitations to approximate the impact of the facility under extreme low flows and high river temperatures. In addition, this permit is scheduled to be re-issued every five years, at which time EPA will review available data, including updated data on streamflow, temperature, and the status of coldwater fishery resources, prior to re-issuing the permit. As new or unforeseen conditions change the environmental conditions of the Westfield River, EPA will adjust the permit conditions to ensure that the aquatic life uses continue to be protected.

Comment # VII.A.22	Commenter: 27
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“Chemical Discharge

The Council believes that the designation of the Westfield as EFH for Atlantic salmon requires a more rigorous evaluation of the impact of chemicals and metals discharged into the river. The Council believes the system set up in the permit, whereby the plant is allowed to operate first, and then testing done after the fact, is inadequate under a proper EFH analysis.”

Response # VII.A.22	Commenter: 2
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EPA is uncertain what “system set up in the permit, whereby the plant is allowed to operate first, and then testing done after the fact” to which the comment refers. EPA conducted an analysis of the impacts of those chemicals and metals proposed to be discharged to the river and included in the Final Permit specific effluent limitations or whole effluent toxicity testing, where applicable. These limitations were either technology-based, informed by the steam electric effluent limitations guidelines, or water quality based, whichever was most stringent. EPA believes that compliance with the effluent limitations included in the Final Permit will ensure that the water dependent resources of the Westfield River are protected, including EFH species. See RTC in Section IX.

Comment # VII.A.23	Commenter: 27
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“Impact of Indian River Hydro Operations

Owners of the Indian River Hydro Plant are in the process of obtaining permission from the FERC to new its generating capacity at the dam. There is no discussion about the potential impact of this

operation within EPA's analysis. Council believes this hydro operation will impact flow. Council also believes FERC has mandated certain flow levels which are inconsistent with the determination of flow levels allowable for the NPDES permit. The Council believes EPA should not issue any type of permit until it consults and coordinates with FERC regarding required flow rates and considers the impact of the hydro operation on EFH."

Response # VII.A.23	Commenter: 27
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EPA does not believe that the proposed Indian River Hydro Facility (FERC Project No. 12462) will impact flows at the proposed facility in a manner that would either impact the withdrawal or discharge limitations required by the Final Permit. The proposed hydro project will operate in run-of-river mode with a stable impoundment level and an interim minimum bypass flow of 50 cfs (based on recommendation by United States Fish and Wildlife Service (USFWS)). EPA expects that the final bypass flow will be greater than the 7Q10. In addition, the tailrace of the hydro project discharges upstream of the proposed discharge location for Russell Biomass.

The minimum bypass flow represents the minimum flow that the operator must direct to the bypassed reach (the area of the river between the dam and the location of the discharge of the dam tailrace) in order to protect habitat in the bypassed reach. The 7Q10 low flow statistic used in EPA's calculation of effluent limitations is the lowest 7-day flow that occurs once in ten years. In other words, the 7Q10 flow is representative of "worst-case" natural flow conditions and is commonly used as a conservative flow value to calculate effluent limits. These two flows are not inconsistent-- they are meant to regulate two separate things. The USFWS minimum bypass flow is required to maintain flow over the dam to prevent the bypassed reach from low water levels. If natural flows in the river are low enough that the minimum bypass flow cannot be maintained, operation of the dam would be restricted. On the other hand, EPA uses the 7Q10 low flow statistic to conservatively represent the minimum available dilution at the discharge under worst-case conditions to ensure that even under severe low flows the effluent is sufficiently protective of aquatic organisms. See RTC V.A.6-7 and IV.E.1-7.

B. Atlantic Salmon Restoration Program

Comment # VII.B.1	Commenter: 01
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"As far as the Atlantic salmon go, the Atlantic salmon are kind a like a canary in a coal mine. Back in the thirties they used to bring canaries in the mines with them, because the coal gas, they couldn't smell it, but the canaries would flop right over and start fluttering. And so the Atlantic salmon are kind of like that type of species, an indicated species. They're not endangered, because the landlocked salmon, *Salmo salar*, is no different than the anadromous fish. And the anadromous fish is in trouble if you -- trout fishing in any of the brooks, you would catch salmon smolt this large. Even down behind the Westfield -- the Russell Post Office, you can catch baby Atlantic salmon, but only 70 came back this year. Now, back 20 years ago, 300 came back. And the big question is, what happened? And the possible answer might be poaching. Because back about 10 years ago, they released 8- to 10-pound salmon on the Texdown (phonetic) Pool and they had various telemetry tags on them. And within a month's time, they found all the tags up on the shore where people had gutted the salmon and left the tags and taken the fish. These fish were worth about a thousand dollars apiece and somebody should have apprehended these people, and they should have been fined a thousand dollars apiece. The foreign fishing fleets may be poaching the salmon off the coast of Greenland,

because we're putting millions of salmon into the Westfield River and all the brooks around it and we're simply not getting the returns. And the -- saying Russell Biomass is going to damage this, doesn't really make sense, because it's being damaged off the coast of Greenland by foreign fishing fleets, they say for the fleet. They say that the striped bass gobbled the salmon up. I was talking to Mickey Novak up at the Sutherland Hatchery. They code the fish. They actually have -- each fish has its DNA encoded and so they don't cross brothers and sisters, but they release a tremendous amount of salmon fry, which is stocked by good-hearted volunteers. The fry grow to about that long, until they get to a smolt size, and then they migrate downstream and they say they're eaten by striped bass, by bluefish, by seals, and I'm afraid by people. But the Atlantic salmon program is in question."

Comment # VII.B.2

Commenter: 10

"I'm a board chairperson and I want to touch on some areas here, on something about the salmon in the river above here. The government has spent a lot of money and effort into trying to restore the salmon to the rivers and there's a lot of controversy about salmon. Mainly, I think the government kind a messed up their species up in Greenland and Nova Scotia when they got the wrong species to try to come back, the way I look at it. And it's very hard to understand how they could do that, but they somehow or another did this. And so we've had some problems in the last ten years bringing the population back. But then there's other areas of the world that have problems with salmon, also."

Comment # VII.B.3

Commenter: 14

"Salmon. The state has spent so much money to clean our river and to reintroduce the fish. I mean, I know a lot of people have said this and I'm just a resident here, but it just doesn't make sense what we're doing here. So, you know, something to think about."

Comment # VII.B.4

Commenter: 27

"I think it is important to emphasize at this point, that there has been a restoration effort going on for Atlantic salmon in the Westfield for 40 years, and \$600 million in federal funds expended. The 1997 Strategic Plan for the restoration effort looks out over the next 30 years, and what needs to be accomplished for successful restoration. If a similar proportion of money is spent over that time period, federal expenditures alone will be more than the \$1 billion in planned profits generated by this plant, all of which will go to a private entity or entities. Those profits cannot be made on the backs of this country's coldwater species, and migratory anadromous species."

Comment # VII.B.

Commenter: 03

The federal government has had some success in restoring Salmon to the Westfield River. Millions of dollars and thousands of hours of volunteer labor have been poured into this effort, and the presence of the Salmon is a big factor in my personal enjoyment of the river. Any impacts on the salmon from the Russell Biomass withdrawals would affect their chances of prospering.

Comment # VII.B.5

Commenter: 03

“Salmon that were stocked as fry’s in the Westfield River above Huntington, have found their way back up the river after going to the ocean and been caught by fishermen in the vicinity of Russell as they return to the water body where they were born from the ocean.”

Comment # VII.B.6	Commenter: 03
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“The very first Atlantic Salmon redd (nest) observed in two hundred (200) years in the Connecticut River watershed was documented in a Connecticut River tributary. This occurred in the Westfield River on Nov.14, 1994 and was heralded in Massachusetts Wildlife – Winter 1995 edition Vol. XLV NO 1. Exhibit L First salmon redd.”

Comment # VII.B.7	Commenter: 03
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“All in all we found a total of seven redds that day. We found viable eggs deposited in the redd we disturbed, and saw at least one adult Atlantic salmon on a redd. Based on counts of adults entering some of their smaller salmon rivers where redd counts had been made in the fall, they estimated two redds per female. If that estimate holds true for our water, we presumably had two to four females out there spawning last fall; we just happened to catch the final days of spawning activity.”

Response # VII.B.1-7	Commenter’s: 01, 03, 10,14 and 27
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EPA recognizes the importance of the Atlantic Salmon Restoration Program and the financial commitment and made by state, federal, and local entities to ensure its future. The Final Permit ensures that the high water quality of the Westfield River necessary to promote salmon populations is maintained. As such, the facility’s discharge is not expected to conflict with the ongoing effort to restore Atlantic salmon to the Connecticut River watershed. Also see RTC in Section VII.A.

Comment # VII.B.8	Commenter: 27
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“We are concerned that the permit takes a permissive stance towards this proposal and the environmental impacts. EPA has concluded that the proponents should be allowed to go ahead and build the plant, even though there is no good data in certain areas. Testing can be done while the plant is in operation, and then the permit can be modified. That is seems to us to be backwards.

EPA’s analysis and judgments on this permit must be considered in the context of this long-term federal restoration project, the fact the Westfield and entire Connecticut River watershed is considered EFH. Its analysis and judgments must be able to stand the test of time, just like the restoration efforts, which continue right despite the fact there is no general favorable political will for the effort. In fact, right now, there is a general belief that these efforts have been a monumental failure.

In one regard, namely the number of salmon that have returned, that may be true as of this moment. In another regard, this project has been a monumental success. USFWS has developed strains of fish that are river specific to tributaries of the Connecticut, despite the fact that the origin of the broodstock was from the Penobscot River in Maine. This key success has laid the foundation for the eventual return of large numbers of Atlantic salmon to tributaries throughout the Connecticut River watershed.

I think it is also important to mention several additional facts. Massachusetts has declared the lower sections of the Westfield to be Class B fisheries. In essence, it is saying that this is not habitat for coldwater species. In point of fact, the water temperature profile of the lower section of the Penobscot River in Maine is probably very similar to that of the lower section of the Westfield. The

Penobscot had nearly 2,000 Atlantic salmon return to the river this year. It is the best surviving run of Atlantic salmon in the country.

So if the Massachusetts standard applied in Maine, the Penobscot's lower end would be marginal habitat for the Atlantic salmon. In fact, Maine considers the Penobscot to be the best habitat in the state. So too does the United States Fish and Wildlife Service, and a host of other federal agencies, which are spending millions of dollars on a massive restoration project for the Penobscot.

This classification system by Massachusetts so far misses the mark for migratory anadromous species that it needs to be disregarded by EPA. The Council believes this misclassification has been deliberate, in attempt to appease business interests, and allow for use of and development of riverine areas in the state for industrial and commercial purposes.

This is the very type of inadequate and harmful state regulation cited in the Federal Register last year, when a proposal was made to list the Atlantic salmon in the Gulf of Maine as endangered under the federal Endangered Species Act. The commentary in the Register acknowledged that state regulation is sometimes biased and inadequate, and that the salmon would benefit from the higher standards required by federal law.

Early this spring, a decision was made to list the Atlantic salmon in Maine as endangered under the federal statute. In fact, there are even fewer salmon in the Connecticut River watershed, and all the rivers between Maine and Connecticut, the lower end of the range for these fish. Given the fact the Maine salmon have been declared endangered, there should be a heightened level of sensitivity to the impact on Atlantic salmon in the lower end of their range, including the Westfield."

Response # VII.B.8	Commenter: 27
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To EPA's knowledge, the classification of the Westfield River is based on sustained river temperatures above the cold water fishery threshold of 68°F during the summer months. Because the Westfield River does not meet the temperature criteria of a cold water fishery, it cannot be designated as such.

However, both the State and EPA recognize the value of the Westfield River for cold water species. The Massachusetts Division of Fisheries and Wildlife (MassWildlife) has specifically designated this reach of the Westfield River as a cold water fishery resource (see p. 24-25 of the Fact Sheet). The state surface water quality standards at 314 CMR 4.06(1)(d)(7) stipulate that

Where a cold water fish population has been identified by the Division of Fisheries and Wildlife as meeting their protocol, but the water has not been documented to meet the cold water criteria in 314 CMR 4.00, the Department will protect the existing cold water fish population and its habitat as an existing use.

The antidegradation provisions in the MA WQS at 314 CMR 4.04(1) state "[i]n all cases existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." In addition, the state's narrative temperature criteria for Class B waters at 314 CMR 4.05(b)(2)(a) state that:

[w]here a reproducing cold water aquatic community exists at a naturally occurring higher temperature, the temperature necessary to protect the community shall not be exceeded and the natural daily and seasonal temperature fluctuations necessary to protect the community shall be maintained.

Thus, although the Westfield River does not meet the definition of a cold water fishery due to summer high in-stream temperatures, the Massachusetts WQSs generously provide for the protection of a cold water fish population regardless of the classification of the waterbody. In its analysis of the potential adverse impacts of the facility, EPA's primary concern was the protection of water quality sufficient to support the cold water fish populations of the Westfield River as an existing use (see, for example, temperature analysis at page 24-27 of the Fact Sheet). See RTC V.C.2-6.

C. Short-nosed Sturgeon and Dwarf Wedge Mussel

Comment # VII.C.1	Commenter: 02
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"Furthermore, what is very important, we already -- and it is the big target of this community -- and this has been applied in the state -- we need to make sure that we are not using current conditions at this stage for comparison and predicting the future. The current conditions are already damaged conditions. Many of you know that this river was in a very bad shape many years ago, now it is advancing. Now all of a sudden it is facing new challenges. We are somewhere between that good developed river and the river under recovery, and we don't know what will happen in the future; and, therefore, we cannot say, let's see what is in the river today, and if we will add a little pollutants or we withdraw a little water, this will not impact the river. We don't know that. We know that we can expect short-nose sturgeon, we cannot say they are not there; so, therefore, they have not included in analysis in this permit. We know that there is a dwarf wedge mussel. It is not enough to say we investigated the place and we didn't find it, because they still could be here,..."

Response # VII.C.1	Commenter: 02
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EPA evaluated the presence of ESA species for the Draft Permit and determined that no ESA species were present at the proposed site. A known population of shortnose sturgeon is present in the lower Connecticut River below the Holyoke dam, although successful reproduction has not been observed in this population. The dam at Woronoco would mark the upstream limit for shortnose sturgeon in the Westfield River. Freshwater mussel surveys in 2004 and 2007 determined that few mussels were present and the area downstream of the dam (near the point of the discharge) has a "substrate unsuitable for mussels in general" (FEIR 6-3).

The Final Permit contains stringent limits to maintain the existing high water quality in the Westfield River. In addition, the cooling water intake structure minimizes potential adverse environmental impacts to aquatic species by meeting the most stringent requirements of best technology available in the Phase I Rule for new power plants. As such, EPA believes that the Final Permit will protect both the shortnose sturgeon and dwarf wedgemussel should either species occur in the Westfield River near the proposed facility location.

VIII. § 316(b) Cooling Water Intake Structure

A. Impingement and Entrainment

Comment # VIII.A.1	Commenter: 05
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“Now Sharon said that there are larger organisms, the larger organisms won't pass through the intake, but she didn't give you any dimension of what that large organism would be, the size of it.”

Response # VIII.A.1	Commenter: 05
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As indicated in the Fact Sheet, RB proposes to use the existing water intake structure at the Westfield River, formerly used by the Westfield Paper mill, to withdraw water for boiler, cooling and fire protection use. RB also proposes to install new intake screens that will have a mesh size of 9.5 millimeters (mm). Fish and aquatic life (e.g., eggs and larvae) smaller than 9.5 mm (or 0.37 inches) could potentially pass through the intake. Juvenile and adult fish common to this reach of the Westfield River range from approximately 2 inches (e.g., blacknose dace, tessellated darter) to over 12 inches (e.g., fallfish, white sucker). All of these organisms are larger than the mesh screen on the intake and can escape the low through-screen velocity (less than 0.5 fps). As a result, the impingement or entrainment of juvenile and adults is unlikely. Fish eggs and fry, however, may be small enough to become entrained. Many of the common species are nest builders (e.g., fallfish, common shiner, tessellated darter) or have adhesive eggs (e.g., blacknose dace, longnose dace), which makes entrainment of eggs less likely. The Final Permit requires that the Permittee monitor entrainment from May through August each year to determine if the intake adequately protects these organisms.

In addition, EPA has determined that the location of the intake structure may help to reduce adverse environmental impacts from entrainment (and impingement) as compared to other possible locations in this vicinity of the Westfield River. There are indications that the velocity of the river would be greater than the approach velocity at the intake structure and this should help organisms to move downriver and past the cooling water intake structure (CWIS). Furthermore, RB proposes to use a closed-cycle cooling system, which is estimated to reduce water withdrawals by approximately 98 percent compared to a once-through cooling system, and, as a result, is one of the most effective ways to minimize entrainment and impingement.

Comment # VIII.A.2	Commenter: 10
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“One issued on this project that I don't really like is, they have the intake valve that brings in the water and if you get a little -- we know there's salmon in the river, they're smolts, fries, and I've caught some myself in there and they're probably 12-, 14-inches long, and they're trying to make their way back down the rivers, and don't you think that they're not going to get caught into this intake valve, and they're going to get pushed against that, and they're going to die right there. And the ones that do get through, they're going to get burnt up. Okay? So there's a whole bunch of stuff that can happen. Now the important thing to look about this pipe is, what's the water flow going by this pipe? If it's more than four miles per hour, that's not enough water. I don't think there -- I'm positive there's not enough water going by them to be able to use this intake valve. So I beg you to take a look at some of the statistics and -- and, of course, I know the U.S. Fisheries has also had a part in this, where they're concerned about it, too.”

Response # VIII.A.2	Commenter: 10
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Section 7 of the Fact Sheet provides EPA's analysis of the best technology available (BTA) for minimizing adverse environmental effects based on the location, construction, design and capacity of the proposed Russell Biomass CWIS. EPA determined that the proposed CWIS would (a) withdraw only an annual average of 662,000 gpd and a maximum daily volume of 885,015 gpd consistent with the use of closed-cycle cooling, (b) have a through-screen velocity of less than 0.5 feet per second (fps), and (c) be located in an area likely to minimize the potential for the impingement and entrainment of aquatic organisms.

Specifically, Section 7.4.1 on page 46 of the Fact Sheet explains that:

The Permittee estimated an approach velocity at the CWIS of 0.19 feet per second, based on a proposed maximum pumping capacity of 1,000 gallons per minute. The Draft Permit limits pumping capacity to 750 gallons per minute, which will result in a lower approach velocity.

Atlantic salmon fry begin the life stage at approximately 1 inch. Parr, the next life stage, range between 1.6 to 5 inches, and transition to smolts at about 5 to 6 inches (USFWS Species Profile: Atlantic salmon¹). All of these stages are large enough to avoid becoming entrained by the 9.5 mm screen. Further, these stages are active swimmers and are likely stronger than the low through-screen velocity, thus, able to avoid impingement. In at least one study, Atlantic salmon smolts were capable of sustained swimming speeds of 4 fps, and burst speeds (like that which might be used to escape impingement) of more than 6 fps (Peake and McKinley 1998²). Hatchery fish may have reduced swimming capability, but still greater than the speed required to avoid impingement on the screens at an approach velocity less than 0.19 fps. As a result, Atlantic salmon are unlikely to become impinged or entrained at this CWIS.

EPA has interpreted the comment's reference to a flow past the intake pipe of more than four miles per hour as a concern that the flow may not provide a sufficient quantity of water to support the intake. Regarding the quantity of water, the maximum daily intake of 885,000 gallons (1.37 cfs), is approximately 7.1% of the 7Q10 flow (19.4 cfs) and less than 8% of the minimum flow under which withdrawals are allowed (17.8 cfs). The flow of the Westfield River at the CWIS is sufficient to support this intake. See RTC IV.B.2-4 and IV.B.5-9. The facility is specifically required to install and operate a closed cycle cooling system to minimize cooling water needs.

Comment # VIII.A.3	Commenter: 36
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"Impingement Attachment B to the Fact Sheet accompanying the draft permit shows the locations of both the intake and outflow structures associated with the biomass plant. Both structures are on the same side of the river as the Indian River Hydro Project. While this project has yet to go on-line, once it does there will be significant attraction of fish to that side of the river."

¹ Danie, D.S., J.G. Trial, and J.C. Stanley. 1984. Species profiles: life histories and environmental requirements of coastal fish and invertebrates (North Atlantic) – Atlantic Salmon. U.S. Fish and Wildlife Service. FWS/OBS-82/11.22. U.S. Army Corps of Engineers, TR EL-82-4. 19 pp.

² Peake, S. and R.S. McKinley, 1998. A re-examination of swimming performance relative to downstream migration of juvenile salmonids. Can. J. Fish. Aquat. Sci. 55: 682-687.

Response # VIII.A.3	Commenter: 36
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If the Indian River Hydro Project does go on-line, the turbine will likely increase the velocity of the river in the impoundment in front of the CWIS. While this may attract more fish to this side of the river, the fish will be drawn past the CWIS by the faster current caused by the turbine. The faster flow past the CWIS, combined with the required low through-screen velocity, will continue to minimize impingement even if more fish are exposed to the CWIS.

Comment # VIII.A.4	Commenter: 31
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“The Fact Sheet on page 44 said that the lack of deposits in the vicinity of the intake structure is due to higher velocities in this part of the river. However, page 43 of the Fact Sheet says that the bottom structure of the intake pipe is covered with two to three feet of sand, sediment, and sticks. These two statements seem contradictory, and it also seems unlikely there would be a great deal of swift velocity or currents in an impoundment except in large flow events.”

Response # VIII.A.4	Commenter: 31
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The Fact Sheet summarizes the Permittee’s evaluation of substrate in the river in front of the CWIS. Page 44 states “substrate conditions in the immediate vicinity of the intake structure are largely free of fine sediments, while closer to Bradley Brook the sediment includes fine sands. This substrate pattern may indicate scouring near the intake structure, which is indicative of higher river velocities.” If the substrate pattern is due to scouring, the higher velocities in front of the CWIS would contribute to minimizing impingement. Still, the CWIS has been dormant since 1994 when the Westfield Paper Company ceased operations, and the river has likely experienced many high flows and storms since then, which would have deposited material in the CWIS. The primary mechanism by which impingement is minimized at the CWIS is not the swift current in the river, but rather the low through screen velocity (less than 0.5 fps), which allows the majority of fish to escape impingement even within the CWIS.

Comment # VIII.A.5	Commenter: 36
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“Further, the stipulations on the cooling water intake screening (CWIS) design should minimize impingement and entrainment in most situations.”

Response # VIII.A.5	Commenter: 36
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EPA agrees. The proposed CWIS would (a) withdraw only an annual average of 662,000 gpd and a maximum daily volume of 885,015 gpd (less than 7.1 % of the 7Q10 river flow) consistent with the use of closed-cycle cooling, (b) have a through-screen velocity of less than 0.5 feet per second (fps), and (c) be located in an area likely to minimize the potential for the impingement and entrainment of aquatic organisms.

Comment # VIII.A.6	Commenter: 36
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“Attachment B to the Fact Sheet accompanying the draft permit shows the locations of both the intake and outflow structures associated with the biomass plant. Both structures are on the same side of the river as the Indian River Hydro Project. While this project has yet to go on-line, once it does there will be significant attraction of fish to that side of the river. As noted in the Fact Sheet, Atlantic salmon are stocked upstream of the site, and salmon smolts migrate through the project area on their way out to sea. These smolts are extremely rheotactic and will follow the main flow (which will be

towards the intake of the hydropower station). Given the location of the Russell Biomass intake in relation to the forebay of the hydropower project, it is possible that fish following the flow of water could come in close proximity to the cooling water intake screening (CWIS). While the screening size likely would preclude entrainment of Atlantic salmon smolts, they potentially could become impinged. The draft permit contains a condition requiring Russell Biomass to implement an impingement monitoring program (Condition IOB). The protocol calls for monthly cleaning of the CWIS, and enumeration of the number of fish impinged. If four or more fish are counted, daily monitoring would be initiated, and would continue until the number of fish impinged falls below four. We recommend increasing the frequency of monitoring to weekly during the smolt migration season (April 1 through June 15). Further, the permit should contain salmon-specific impingement limits similar to those set for the Vermont Yankee nuclear plant. Those limits are based on the equation contained in Attachment A (enclosed). If, during the term of the NPDES permit, no salmon are impinged, the salmon-specific monitoring requirements could be deleted from any future permits issued for the project.”

Response # VIII.A.6	Commenter: 36
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Fish, including Atlantic salmon smolts, could come in proximity of the CWIS, even in the absence of rheotaxis. A low through-screen velocity (TSV) (no greater than 0.5 fps) is required by the permit specifically to enable most juvenile and adult fish to escape impingement. A fish that can maintain swimming speeds greater than the TSV will be able to avoid becoming impinged on the screens. In at least one study, Atlantic salmon smolts were capable of sustained swimming speeds of 4 fps, and burst speeds (like that which might be used to escape impingement) of more than 6 fps (Peake and McKinley 1998). Hatchery fish may have reduced swimming capability, but still greater than the 0.5 fps speed required to avoid impingement on the screens. EPA believes it is unlikely that impingement would be an issue for migrating smolts. *Also see* RTC VIII.A.2 and VII.A.4. However, EPA agrees that increasing the frequency of monitoring to weekly during the smolt migration season (April 1 through June 15) for the first 2 years the plant is operating, is reasonable and prudent to provide information to confirm EPA’s evaluation. The Final Permit (Part I.A.10.b) includes this requirement.

Comment # VIII.A.7	Commenter: 03
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“Trout are dependent on aquatic insects which live throughout the water columns for their food. When food supply is disrupted, in an area of the river, the trout will disperse. I am concerned that the small insects which they feed on will be swept into the intake and diminish their food supply.”

Response # VIII.A.7	Commenter: 03
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Trout tend to be opportunistic feeders with a varied diet that includes drifting and bottom-dwelling aquatic macroinvertebrates and terrestrial insects (Raleigh 1982).³ Some of the small insects and macroinvertebrates may be entrained by the intake; some will be larger than the 3/8-inch (9.5 mm) mesh and will not become entrained. Still, the maximum withdrawal rate under the lowest allowable flow rate (17.8 cfs) comprises less than 8% of the total flow of the river. *See* RTC IV.B.2-4 and IV.B.5-9. This intake volume should not artificially reduce the availability of prey for trout species in the Westfield River.

³ Raleigh, R.F. 1982. Habitat Suitability Index Models: Brook Trout. United States Fish and Wildlife Service. FWS/OBS-82/10.24. 42 p.

B. Air cooling - BTA

Comment # VIII.B.1	Commenter: 14
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“And that leads me, too, to water is one of our most precious resources. I mean, in New England, we have water, we have -- it's wonderful how much clean and fresh water we have; and yet we're going to let one company, Mr. Hull, this potential Biomass plant, take this water that's one of our most precious resources, and not just take a little bit of our water, 880-something-thousand gallons of water a day? I mean, what happens if all of a sudden we have a drought? I remember seeing on the news, Lake Lanier in George, just as an example, I remember seeing their docks sitting in the mud because they had a drought. Now I know we've been blessed this year with a lot of rain, but that could happen to us. How can we allow this one company -- and he really doesn't even need our water, he could air cool his plant, so why are we letting him take our water? I mean, I think there's better technology.”

Response # VIII.B.1	Commenter: 14
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Reducing the cooling water intake structure's capacity is one of the most effective means of reducing entrainment and impingement because limiting the volume of water withdrawn reduces the number of organisms entrained and can also reduce the intake velocity to allow organisms that would otherwise become impinged to swim away. *See* Phase I Final Rule 66 Federal Register 65273. Closed-cycle cooling systems are estimated to reduce water withdrawals by as much as 98 percent compared to once-through systems, and, as a result, are one of the most effective ways to minimize entrainment and impingement. The use of closed-cycle cooling with wet, mechanical draft cooling towers at Russell Biomass, which will withdraw less than 1 million gallons per day (MGD), complies with the Phase I Rule's requirements for larger (greater than 10 MGD) power plants under 40 C.F.R. § 125.84(b)(1). The Phase I rule states that “a new facility drawing equal to or more than 10 MGD must reduce intake flow to a level commensurate with which can be attained by a closed-cycle recirculating cooling water system.”

Use of a “dry” or air cooled condenser system at the plant is also technically viable and would satisfy the BTA requirements of the permit. However, dry cooling, which would only achieve a relatively small additional marginal reduction in entrainment and impingement over the high end of the reduction range that can be achieved with wet cooling towers, is significantly more expensive⁴, has higher energy penalties⁵, requires more space for installation and raises more significant noise

⁴ At <http://social.csptoday.com/industry-insight/dry-cooling-slaking-thirst-concentrated-solar-power> “The relative costs of using air instead of water also need to be considered. ‘Air-cooled condensers can be up to four times [the cost of] conventional condensers and wet cooling towers. In addition, air-cooled condensers require higher auxiliary fan power compared to wet cooling towers. This loss of MW will impact on O&M costs,’ says Patel.”

⁵ The following excerpts were taken from the “Energy Penalty Analysis of Possible Cooling Water Intake Structure Requirements on Existing Coal-Fired Power Plants” by the U.S. Department of Energy, dated October, 2002: “The reduction in net electric output is known as the energy penalty. In order to compensate for the electricity lost as a result of the energy penalty, utilities would need to produce more electricity through burning additional fuel, thereby generating additional air emissions.” In addition “[t]he results of the annual energy penalty modeling show that conversion to a wet tower could cause energy penalties ranging from 0.8 percent to 1.5 percent. Conversion to an indirect-dry tower could cause energy penalties ranging from about 4.2 percent to 5.2 percent using 20 degrees F for the approach, and 7.9 percent to almost 8.8 percent using an approach of 40 degrees F.”

concerns than wet cooling towers. *See also Riverkeeper, Inc. v. EPA*, 358 F.3d 174, 194-96 (2d Cir. 2004) (“*Riverkeeper I*”) (upholding EPA’s rejection of dry cooling as the BTA for the Phase I § 316(b) Rule addressing new facilities).

In response to the question concerning potential droughts, the Russell Biomass permit limits the daily withdrawal flow from the Westfield River to 885,000 gallons per day, which is 7.8% of the lowest streamflow at which withdrawals would be allowed (17.8 cfs). MassDEP’s Water Management Act (WMA) Permit for Russell Biomass requires that the facility shall cease withdrawal when the river flow falls below 17.8 cfs based on the three upstream USGS riverflow gages. *See* WMA Permit #9P2-1-04-256.04, July 2, 2008.

Comment # VIII.B.2	Commenter: 16
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“Anyways, I hope the permit is denied. There's a lot of talk about hot water and being discharged into the river, and there is a solution, obviously, to the problem; there is a technology that can be used. The air technology, instead of a water technology. It would be much better to use that and then try and control the air pollution that will result from burning old wood... I do not believe that a permit should be granted when there is a different type of a way to cool that power plant, if we need to burn wood chips for energy.”

Response # VIII.B.2	Commenter: 16
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As stated in this Response to Comments document (RTC IV.E.1-8, V.A.6-7, and V.C.2-7), EPA believes that the heated discharge from the facility will not raise the ambient temperature of the Westfield River more than 0.3°F. As previously explained above, use of a “dry” or air cooled condenser system at the plant is also technically viable and would satisfy the best technology available (BTA) requirements of the permit for minimizing entrainment and impingement. However, dry cooling is significantly more expensive, has higher energy penalties, requires more space for installation and raises more significant noise concerns than wet cooling towers.

Comment # VIII.B.3	Commenter: 12
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“EPA has not required this technology [dry cooling towers] primarily for cost reasons. (EPA also cites added noise (but there has been no analysis of noise impacts or mitigation possibilities) and some reduction in energy efficiency (really a cost argument).) EPA also relies on its analysis to conclude that “the small remaining thermal discharge (from wet cooling) should not cause water quality problems.” Page 24 of 52.”

Comment # VIII.B.4	Commenter: 26
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“Why isn t this proposed plant using air cooling instead of water cooling?”

Comment # VIII.B.5	Commenter: 22
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“They should be made to use the best technology available which is air cooling. This would insure the maintenance or a good river system.”

Response # VIII.B.3-5	Commenter's: 12, 22, and 26
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In the absence of detailed regulations, EPA has, for many years, made CWA § 316(b) determinations on a case-by-case basis, both for new and for existing facilities with regulated CWISs. In 2001, EPA promulgated new, final § 316(b) regulations providing specific technology standard requirements for new power plants and other types of new facilities with CWISs. 66 Fed. Reg. 65255 (Dec. 18, 2001) (effective date of the regulations is January 17, 2002). In their permit application, Russell Biomass proposed using the wet mechanical draft cooling towers, thus complying with the Phase I regulations. The Phase I regulations apply to new facilities with intakes greater than 2 MGD, but it is unclear what the intake at Russell Biomass would be if an open-cycle system had instead been proposed. EPA applied § 316(b) using best professional judgment, and this judgment was informed by the terms of the regulations for new facilities. In making best professional judgment determinations under CWA § 316(b), EPA considers engineering issues, environmental/ecological issues and economic issues related to the costs of implementing CWIS technology options. *Also see* RTC VIII.B.1 and VIII.B.6.

Comment # VIII.B.6	Commenter: 33
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“I wonder why the state has not required construction of air-cooled generators to be used during times what the Westfield is too low for water withdrawal and effluent mixing. Without such reassurances it is difficult to believe that utility operators will ever cease withdrawing.”

Response # VIII.B.6	Commenter: 33
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Air cooling, rather than wet mechanical draft cooling towers, could be used to reduce cooling water temperatures. This technology would be built in place of the proposed wet mechanical draft towers. The Final Permit does not mandate that the Permittee install either wet or dry cooling towers, as both technologies satisfy the best technology available (BTA) requirements of the permit for minimizing entrainment and impingement as well as meeting the requirements of the Phase I Rule for new facilities. During times when streamflows in the Westfield River drop below 17.8 cfs, the facility must cease withdrawals and rely only on on-site water storage for cooling tower make-up volumes. In addition, the Permittee may only withdraw a maximum of 7.8% of flow when Westfield River flows are between 17.8 and 19.2 cfs, according to the Water Management Act Permit.⁶ The facility will continue to discharge under these conditions, but according to EPA's calculations, even the lowest recorded flow (13.2 cfs) would likely avoid any adverse impacts from the discharge. *Also see* RTC's VIII.B.3-5 and V.A.6-7.

C. Zero discharge -BTA

Comment # VIII.C.1	Commenter: 13
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“... this discharge into this river is completely unnecessary. A zero discharge, a zero liquid discharge system should be used in order to protect this river. That is the state-of-the-art technology. That is, this is a new facility. There's no reason not to require the state-of-the-art technology at this point in a new source like this. We're not eliminating pollutants by discharging the pollutants into the river. To eliminate these pollutants, we should go for a zero liquid discharge system.”

⁶ The Water Management Act Permit #9P2-1-04-256.04 for Russell Biomass' proposed withdrawal was issued July 2, 2008 by MassDEP. See page 6.

Comment # VIII.C.2
Commenter: 13

“1. The Best Available Technology for the Russell Incinerator should be a Zero Liquid Discharge System that has no effluent discharge to the Westfield River. This is the current practical technology that should be installed at this facility.”

Comment # VIII.C.3
Commenter: 13

“Using Zero Liquid Discharge Technology is the only suitable alternative. This was not addressed adequately, though at the hearing it was described as not selected for economic reasons. The NPDES process should not be guided by finding the cheapest way to pollute the river or the environment. As was pointed out at the hearing, this facility stands to get millions of dollars in tax-payer subsidies. It can therefore be expected that the best state-of-the-art technology will be employed so that the tax-payers are not paying to pollute their own river.”

Comment # VIII.C.4
Commenter: 06

“Zero Liquid Discharge. USEPA should require zero discharge state-of-the-art dry cooling. Discharge of heated water to the river containing phosphorus and other contaminants is totally unacceptable, particularly in light of the available alternative of dry cooling.”

Response # VIII.C.1-4
Commenter's: 06 and 13

In establishing NPDES effluent limits in accordance with Subpart A of 40 C.F.R. 125 and Sections 301(b) and 402(a)(1) of the CWA, EPA considers water quality-based effluent limits and technology-based effluent limits. As explained on page 7 of the Fact Sheet, the proposed RB facility does not meet the applicability criteria for the Effluent Limitation Guidelines (ELGs) for the Steam Electric Power Generating Point Source Category. The Steam Electric ELGs were used on a best professional judgment (BPJ) basis, however, to assist in the development of appropriate limits for the Draft Permit. In determining technology-based effluent limits using BPJ, EPA considers a number of factors including non-water quality environmental impacts. In the case of evaluating zero-liquid discharge technologies, EPA has not selected a zero liquid discharge technology in permitting Russell Biomass because of the non-water quality impacts. As described in the NPDES Permit Application and Supplemental Information, these impacts associated with a zero liquid discharge include increased air particulate emissions and energy use. In applying BPJ, EPA also considered the ELG for steam electric power plants which does not select zero liquid discharge technologies as the BAT or the NSPS for any power plant waste stream. Even though Section 316(b) regulates cooling water intake structures rather than cooling water discharges, EPA also considered the Phase I Rule requirements for new, larger power plants found in 40 C.F.R. § 125.84(b)(1). The regulation does not require an available zero water intake technology (dry cooling) but rather states that “a new facility drawing equal to or more than 10 MGD must reduce intake flow to a level commensurate with which can be attained by a closed-cycle recirculating cooling water system.” Based on BPJ in this facility-specific case, EPA has determined that closed-cycle cooling is the appropriate technology for the cooling water intake and discharge. Further, EPA has determined that the limits in the Draft Permit associated with this technology will be protective of water quality standards in the Westfield River. *See* responses to comments in section VIII.B relating to the use of air cooling and section VI regarding other parameters. *Also see* response II.A.2-4 regarding NPDES requirements for new sources.

D. Reuse of Heated Water

Comment # VIII.D.1	Commenter: 01
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“Now I was talking to John Boss and I said, why are you releasing heated water into the river, when heated water could be used? And, again, the concerned citizens of Russell had mentioned why not a greenhouse? You have this heated water, why not use it, instead of releasing it into the river, why not use it constructively to build greenhouses and grow food for us? And that is a question that the -- I'm sorry, that is a question they are exploring. And so the Westfield Paper Mill from 1959 to 1966, and they used to release heated water into the river and until the EPA said, hey, you guys got to do a better job. So they got to recirculating this heated water for their paper machines and they found actually that they saved an awful lot of money in oil; that they weren't, you know, were throwing it away. I think the same thing, using this heated water, rather than throwing it into the river, could be of benefit to us.”

Response # VIII.D.1	Commenter: 01
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EPA recognizes that using the waste heat for greenhouses is a promising idea but currently has no knowledge of any similar applications. EPA encourages Russell Biomass to continue to explore ways of using waste heat from the power plant. Requiring the reuse of waste heat for greenhouses, however, is beyond the scope of the NPDES permitting action taken today. The objective of a NPDES permit is to ensure that water quality is not compromised by the discharge of effluent from a point source. In this case, EPA determined that the thermal limitations and conditions required in the Final Permit should protect the thermal water quality of the Westfield River.

E. Co-generation

Comment # VIII.E.1	Commenter: 11
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“Please see the attached for a discussion of co-generation when burning fossil or biomass fuels. To combat global warming we need to generate electricity on the premises (on the campus) so the evolved heat can be used. Otherwise we are only reaching 33% efficiency at the best. And all the evolved heat energy not used (for heating or refrigeration, etc.) is energy wasted. To generate the heating or refrigeration, you'd need to separately burn more fossil or biomass fuels, putting out even more CO2.”

Comment # VIII.E.2	Commenter: 11
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“It's a law of thermodynamics that you can only get, at a maximum, one-third of the energy chemically that's in a fuel, whether it's wood, oil, gasoline, whatever. And on a nationwide basis, we're not even up to one-third. We're only getting out 19 percent of all the coal and oil that we burn in big smokestacks to get electricity. So we have a hugely inefficient system, creating lots of unnecessary heating of the atmosphere. Now the way to solve this is to use something called cogeneration, where right on the same campus, for example, UMass now has cogeneration, the Cooley Dickenson Hospital in Northampton is going to burn wood, I believe, and have cogeneration. Well, what is cogeneration? That's where you use fuel to make electricity, but right on the same campus, the two-thirds of the energy, instead of sending it off, because remember one-third is the limit you can possibly get out of what's in the fuel, one-third can only go towards -- only one-third can go towards electricity. So instead of sending two-thirds to the atmosphere, which is evolved, wasted heat, you keep the heat in tunnels and you can have heating for the campus buildings, and that

heat can also drive air-conditioning. So what this -- all the picture this presents is, if you're going to burn anything, and if you want to limit burning any fossil fuel or any wood, we have to only be doing it as a transition, until we get solar and wind and geothermal up and running. So we're talking about the context here, this is just one plant among fossil fuel burning plants. ... So we want to go cogeneration, which means we want to do -- we want to have many small wood-burning plants, not big megawatt ones in just a few locations... So that's what I have to say and I think we need to look at the broad picture here about what's going on with this."

Response # VIII.E.1-2

Commenter: 11

EPA agrees that there is almost always environmental benefit if a resource, in this case heat, can be reused and/or recycled. EPA actively practices and promotes recycling programs. Russell Biomass has considered this option and has pointed out that this alternative requires an end user within a reasonable proximity to the facility and that they believe that no potential end users are nearby, at this time. Again, this issue is beyond the scope of this NPDES permitting action.

F. Fogging and Freezing

Comment # VIII.F.1

Commenter: 09

"Another concern, as we said, with the lack of water and the amount of water being taken out, and then only 15 percent is going back into the river, and I have a concern that other 85 percent that's coming out as moisture is going to be trapped in this valley. Will it make -- all the wildlife or the trees and so forth, will we become an icicle in the winter? When you're talking temperatures down to zero, midwinter out here, and you have all this steam coming out, is that going to freeze the trees and everything else that are along that river? And then what's going to happen? All that vegetation is going to end up dying off, because there will be icicles. I don't know where else that steam is going to go, or we're going to have a constant snowstorm, like you do, you know, in New York, Upper New York, where it comes, you know, off the lakes and so forth."

Comment # VIII.F.2

Commenter: 14

"...I don't understand this whole evaporation issue. Now I understand that they're going to be allowed to withdraw about 885,000 gallons of water a day. Now they're putting back, from what I understand, about 130 or 150 or whatever. What happens to the rest of that water? Now, in winter, if that water is evaporating, we're in a bowl. If you go and you look at the topography, the hills all around, what's going to happen to all of this water, 650,000 gallon-ish a day that are evaporating? What's going to happen in winter? I mean, are we going to have a tropical rain forest in our little village? I mean, are we going to have an icicle in the winter? Where does this water go and what happens to it? Seems like a waste of water."

Response # VIII.F.1-2

Commenter: 14

Mechanical draft cooling towers work by using the atmosphere to dissipate waste heat. Instead of returning heated water to the Westfield River as would happen if a once-through cooling water system was used, the heated water will be sprayed into the top of mechanical draft cooling towers. The droplets of water then travel down the "fill" of the cooling tower. This fill typically consists of plastic media designed with extensive surface area. Large fans at the top of the cooling tower draw in air in a counter-current direction to the falling water droplets. As the air contacts the droplets, the

water is cooled primarily (although not entirely) through the process of evaporation. The evaporated droplets are expelled at the top of the cooling towers, resulting in the emission of water vapor.

Because the air exiting the cooling tower is almost always fully saturated with water (i.e., 100 percent humidity), the plume usually condenses immediately after exiting the cooling tower (i.e., as a visible plume) and then re-evaporates at some downwind point. In general, condensed plumes remain aloft and evaporate before contacting the ground or other surfaces.

Meteorological conditions dictate the exiting plume characteristics. For example, under some conditions, it is possible for the plume to come in contact with the ground, resulting in a condition called “fogging,” or, in colder weather, an “icing” condition. Both of these impacts are undesirable as they have the ability to present potentially hazardous driving conditions. In Appendix K of the 2007 DEIR, the Permittee presented data from atmospheric diffusion modeling showing that no fogging impacts would occur; mainly due to the height of the vapor plumes above the receptors. Based on the modeling results, the Permittee determined that “no fogging or icing will occur on the CSX rail line, on any roadway in the Town of Russell, including Route 20 and the Main Street Bridge, or on Interstate 90 (I-90). The project’s cooling tower will not adversely affect public safety or the climate in the Town of Russell.” See Russell Biomass Final Environmental Impact Report, Section 11.2.5, page 11-4. EPA has evaluated the Permittee’s atmospheric diffusion modeling including a review of the assumptions and data output and specifically the potential impact on the Main Street bridge. Based on this evaluation, EPA determined that “in most cases the visible plume caused by water vapor emissions from the cooling tower would not reach the bridge. In those cases in which the water vapor emissions would reach the bridge, the visible plume would be 100 feet (about 30 meters) above the bridge... it is unlikely the cooling tower would cause icing.”⁷

If, by chance, however, the future finds that steps are needed to mitigate this concern, there are a number of methods of accomplishing such mitigation to ensure public safety (e.g., enhanced roadway management, unit shutdowns, or combinations of these options). It is important to note that cooling tower technology is well established and has been used for decades at power plants and in many other industrial applications throughout the world. Plume-related concerns are hardly unique to the use of cooling towers and, in most cases, are satisfactorily addressed through proper sizing and siting of cooling towers or, when warranted, by using available additional plume abatement technologies added to the cooling tower design and construction.⁸ Based on EPA’s review of the potential plume impacts for this facility, EPA is not requiring additional plume abatement technology in this case.

⁷ March 18, 2010 memo from Ian D. Cohen, Air Permits, Toxics, and Indoor Air Unit, EPA to David Webster, Chief, Industrial Permits Branch, EPA.

⁸ Plume-Abatement Technology

The most common, and definitive, method of addressing plume-related concerns from cooling towers is to equip the towers with technology that abates the plume so that plume impacts are eliminated. Cooling tower manufacturers offer plume-abatement technology that can be added (in some instances after installation) to standard mechanical draft cooling towers. This type of technology is referred to as a “wet/dry” or “hybrid” tower. Basically, the plume is heated before it leaves the tower. This additional heat raises the plume height and the temperature of the plume so that the plume is no longer saturated with water (less than 100 percent humidity), thereby allowing the plume to mix with the surrounding air before the water vapor in the plume has a chance to condense. This technology is widely used to abate plume effects and has the added benefit of reducing the visibility of the plume, which can be considered esthetically displeasing.

IX. Other Potential Impacts

A. Global Warming

Comment # IX.A.1	Commenter: 11
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“So I'm kinda perplexed here at this conversation about this lovely river ... I used to fish for trout, native brook trout, in Arizona as a child, but we have a lot bigger fish to fry than worrying about this one river in Western Massachusetts. We have a real danger for the survival of humanity with global warming and peat oil.”

Comment # IX.A.2	Commenter: 11
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“... the soot from wood, layers on ice in a particularly odd way on polar caps, and that renders the absorption of heat on the polar caps worse than soot from coal. So wood is just not the way to go.”

Response # IX.A.1-2	Commenter: 11
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Climate change is an environmental issue of major concern all over the country and governments at all levels as well as universities, non-profit groups, businesses and individuals work to conduct scientific research and develop and implement strategies to reduce greenhouse gas emissions. In the United States, the statutory and regulatory responses to climate change are evolving along with our understanding of this complex issue. While EPA acknowledges the commenter's concern, this issue is outside the scope of this NPDES permit. This permit addresses Russell Biomass' water withdrawal from and discharges to the Westfield River.

B. CO₂ Emissions

Comment # IX.B.1	Commenter: 11
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“This plant has been pushed by a local business concern for five years bizarrely without the most elementary requisite scientific knowledge as to its global warming effects. To wit. Coal is 1.5 times as bad a CO₂ emitter per megawatt of electricity generated as is oil or natural gas. And wood is 1.5 times as bad a CO₂ emitter as coal. Last time I checked 1.5 times 1.5 is 2.25. To burn wood instead of oil or gas in the interim period we are in (until photo-voltaics, wind, and geothermal come on line) is tantamount to turning in a 55-mpg Prius for a 24-mpg clunker car ($55 / 2.25 = 24$). This is NOT the way to go. How in the world could someone with a straight face even approach the EPA or the MassDEP to propose a "sustainable" plan for energy self-sufficiency in Western Massachusetts unless one were ignorant of this most fundamental scientific fact or else one were an abysmally cynical opportunist? In either case, what kind of regulating agencies are the EPA and the MassDEP that they would not have uncovered this most fundamental scientific fact and immediately denied this ill-advised permit? Combatting global warming is not a game or some sport. It is a matter of survival of civilization. You cannot fight the truth, and the truth is that wood is CO₂ dirty. Let me quote the editor of my local newspaper - the Daily Hampshire Gazette - Larry Parnass - in his editorial on August 14, 2009. He is writing on uses of the Quabbin Reservoir - an ecosystem of greatest importance that unites the interests of eastern and western Massachusetts. He opens his editorial this way, where he criticizes the Mass DCR for being oblivious to a fact about calcium and possible zebra mussel infiltration: **‘To err is human. To stick with an error not supported by science or common sense is unforgivable.’**”

Comment # IX.B.2

Commenter: 11

“The problem with burning wood, and I have a wood stove at home, the wood is great to have in your own home, but the problem with wood is that it puts out half again more carbon than coal does for your megawatt electrical output. And coal puts out half again more than oil and gas. So the proposal here, you see, the buy-in is the politics on the state level is, oh, this is local, sustainable energy, native grown wood forest, here in Massachusetts. We can get off Arabian oil. Isn't that great? Well, we have all the coal we want and we burn coal in Holyoke, and we're much better off bringing coal by truck to this plant, if we get it built, than wood; because coal is only one-and-a-half times -- wood is one-and-a-half times worse than coal, as far as CO2 for megawatt output.”

Comment # IX.B.3

Commenter: 06

“Not only economically, but the whole premise of the Biomass plant is totally flawed. It's being advertised as a solution to climate change and energy dependence, but the CO2 emissions are very extreme from a Biomass plant, more than coal, more than natural gas, more than the national average; about 1.5 to over 3-1/2 times as much CO2 per unit of energy as coal, so it doesn't make sense economically, it doesn't make sense environmentally. The CO2 emissions are tied to the low efficiency of the process that only captures less than 25 percent of the energy in the wood. So it's dinosaur technology, it should not be propped up with subsidies or with impacts to the environment.”

Comment # IX.B.4

Commenter: 06

“Project is Fundamentally Flawed. The project at its core is fundamentally flawed because the technology is highly inefficient. Forest incinerators such as the Russell Biomass plant are the Hummers of electricity generating technologies. As a result of their inefficiency, releases of carbon dioxide per unit of energy generated exceed those of any other type fuel (except nuclear). See Attachment 2 for data that backs up these statements. The public has everything to lose and nothing to gain if this incinerator goes forward. The only gainers are the project developers/owners. The miniscule amount of energy that the incinerator would generate could easily be made up for by conservation, at a fraction of the cost (conservation costs about 3.2 cents per kilowatt-hour and is the cheapest source of electricity, according to the Massachusetts Department of Energy Resources²) and with none of the negative impacts.”

Comment # : IX.B.5

Commenter: 06

“...Russell Biomass would emit 1.5 to 3.5 times as much CO2 per unit of energy generated as each of the 10 highest CO2-emitting power plants in the Northeast. Comparisons with cleaner burning coal plants would be even more dramatic... CO2 emissions from Russell Biomass would be 1.6 times those of coal, 2.5 times those of natural gas, and 2.5 times the national average... The main reason biomass emits more CO2 per unit of energy than other combustibles is that the biomass combustion process is pathetically inefficient. Whereas up to 60 percent of the energy in some fuels is converted into electricity upon combustion, at most 25 percent of the energy in wood is converted into electricity upon combustion in a large-scale biomass incinerator. More fuel must be burned to provide a unit of energy, and correspondingly greater CO2 is therefore emitted.

Combined Cycle Power Plant (Natural Gas): 60%

Conventional Coal Plant: 45%

Biomass Stoker Power Plant: **15% - 25%**

Source: Professor Curt Freeman, Western New England College, July 2009.

The fundamental inefficiency of this dinosaur technology results not only in excessive CO₂ emissions, but also excessive emissions of other air pollutants and waste heat, and increased needs for cooling (e.g., using/degrading river water) and petroleum for fuel processing and delivery and ash removal. All of this leads to high cost and pressure for public subsidies.”

Response # IX.B.1-5

Commenter's: 06 and 11

EPA acknowledges that the carbon dioxide emissions and the sustainability of various energy sources are important issues. That view is shared by programs in other agencies that have authorities more closely aligned to the regulation of energy sources. The NPDES program authorized by the Clean Water Act regulates the point source discharges of pollutants to surface water and the intake of cooling water, and these comments are outside the scope of this NPDES permitting action.

Comment # IX.B.6

Commenter: 03

“Also, with regard to the use of Best Professional Judgment in determining the pretreatment technology, any cost analysis or consideration must take into account that biomass incineration to generate electricity is considered “renewable energy” under MA law, and does not have to comply with the GWSA or cap and trade. The CO₂ emissions from biomass burning are exempt from US EPA air permit regulations and from MA air permit regulation and cap and trade. EPA must level the playing field for biomass incineration in applying the CWA; biomass gets a free ride on its GHG emissions.”

“I'd like to point out that Biomass plants are not like fossil fuel plants, because they don't have to offset for their CO₂ emissions. They're at a distinct financial advantage, and even when they don't have to cap and treat, their CO₂ is not regulated. That's a glaring loophole in the EPA's regulatory program that needs to be closed to level the playing field.”

Response # IX.B.6

Commenter: 03

EPA does not consider exemptions from other regulations when determining BPJ-based technology limits for the discharge of pollutants in NPDES permits. For the Russell Biomass permit, EPA determined that the technology based BAT and NSPS limits from the Steam Electric ELG's are appropriate to apply to the Russell Biomass facility. Page 16 of the Fact Sheet explains that “the proposed Russell Biomass facility does not fall within the Steam Electric Power Generating Point Source Category only because it relies on biomass for its fuel source rather than a fossil or nuclear fuel. Nevertheless, EPA concludes that it is reasonable and appropriate to consider the ELGs for the Steam Electric Power Generating Point Source Category (the Steam Electric ELGs) in developing BPJ-based BAT limits for the Russell Biomass facility given that it meets the other criteria for classification under this industrial category. *See* 40 C.F.R. § 423.10.¹”

The application and direct implementation of EPA and Massachusetts air permitting cap and trade rules are outside the scope of this NPDES permit.

¹ The Steam Electric Power Generating Point Source Category includes facilities whose discharges result “from the operation of a generating unit by an establishment primarily engaged in the generation of electricity for distribution and sale which results primarily from a process utilizing fossil-type fuel (coal, oil, or gas) or nuclear fuel in conjunction with a thermal cycle employing the steam water system as the thermodynamic medium.” 40 C.F.R. § 123.10.

C. Forest Conservation

Comment # IX.C.1

Commenter: 32

“On the subject of tree harvesting for use as the BioMass fuel, besides trees important function to absorb hazardous carbon, trees also cool the earth - by at least 10° degrees.”

Comment # IX.C.2

Commenter: 23

“Now, as far as monitoring. Let me tell you what Chris Matera taught me. He's a -- I think he's an engineer, but besides that, he moved to this area from Oregon, because their forests were being clear-cut out there and he just wanted to live in a forested area. So he moved out to Russell, Mass. He went out with a friend of Jana and flew around and took pictures of the clear-cutting. This is illegal in the State of Massachusetts to clear-cut state forest next to rivers, like was just done in the Wendell State Forest, completed on May 11th, the trees were sold for \$3,000 by the loggers -- this is the loggers' words, \$3,000 to clear-cut the Wendell State Forest, put in the logging roads and ruts and everything else with it, next to a river, and send it 158 miles to the Portsmouth, guess what? Biomass incinerator and the Westminster Biomass incinerator for 50 megawatts of power. Now, if the state is not going to defend our forests from being cut like that -- and even in the Quabbin Reservoir, I saw it with my own eyes, huge clear-cuts in Quabbin. If the state is not going to defend us from that, we're going to have to do civil disobedience, we're going to have to stand in the forests and protect them, because if these people will not deny this permit, then we are going to have to. We're going to have to deny this permit. We'll have to occupy the land. We'll have to stand in the forest. We're not going to let them take our beautiful forest away.”

Comment # IX.C.3

Commenter: 06

“Biomass Plants are Not Fueled Sustainably. Our neighbor, Maine, has had biomass incinerators since the 1980s and provides an excellent case study for what happens. Approximately 12 biomass incinerators in Maine are generating electricity for the grid today. All started out burning only forest biomass. Eight have switched to a ~50%/50% mix of forest biomass and construction and demolition (C&D) wood, partly because forest biomass prices have increased (as supplies tighten) and partly because burning C&D wood is highly lucrative. (It is lucrative because generators pay the incinerator to take C&D wood because it is contaminated undesirable waste). It is well documented that central and northern Maine has been ravaged by liquidation cuttings by paper companies in advance of their departure from Maine, and from “cut and run” logging by other parties. Incinerators have to look farther and farther afield, hundreds of miles, for forest biomass. They also go to increasingly more difficult locations for wood, such as steep slopes and areas surrounded by wetlands. Europe, which also has biomass plants, is eyeing New England as a potential source for biomass. In reality, largescale biomass plants are not fueled sustainably. Their need for wood is simply too great.

The World's Forests are Being Destroyed at a Rapid Rate. A 2008 study commissioned by the European Union and conducted by a Deutsche Bank economist concluded that the annual global cost of forest loss is between \$2 trillion and \$5 trillion (and it's not just rain forests that are the issue). This figure comes from adding the value of the various services that forests perform, such as providing clean water and absorbing carbon dioxide. The study concluded that forest loss dwarfs the banking crisis that was underway at the time of the study and that we continue to reel from today. “It's not only greater but it's also continuous, it's been happening every year, year after year,” said the

study leader. The greatest cost to western nations would initially come through losing a natural absorber of the most important greenhouse gas (*BBCNews, October 10, 2008*).

We Should Do Everything in Our Power to Preserve and Restore Forests. Forests are one of the few means available to us to reduce concentrations of CO₂ in the atmosphere, a primary cause of global warming. They are not absorbing all the CO₂ we need them to today, as evidenced by increasing CO₂ concentrations in the atmosphere. We need more trees! Efforts to deal with climate change should promote trees and rule out large-scale biomass incinerators that would destroy them. Biomass incinerators should be ruled out anyway, just on the basis of their excessive CO₂ emissions. The damage to carbon sequestration services is an added insult, a double whammy.”

Response # IX.C.1-3	Commenter's: 06, 23, and 32
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Tighe and Bond, the Permittee's consultant wrote the following to EPA on August 17, 2009: "Comments on clear cutting of forests in Massachusetts were made [during the public hearing]. The Draft and Final EIRs both describe the source of fuels to be used for the facility and clearly focus on existing forest industry residuals. In addition, none of the comments mentioned that in recent years extreme measures have been taken to control the spread of diseased trees affected by blights. To our knowledge, the referenced clear cutting done to control blight from spreading and to protect other forested areas was not done in order to create fuel for biomass facilities. However biomass facilities do provide a means to beneficially use material that otherwise would be burned in the field to control disease with no emissions controls. Further, Russell Biomass will obtain its forest management fuel under a state-approved forest management plan." EPA acknowledges that forest conservation is an important matter. *Also see* response to comment IX.B.1-5, above. However, the NPDES program authorized by the Clean Water Act regulates the point source discharges of pollutants to surface water and the intake of cooling water. This comment is outside the scope of this NPDES permitting action.

D. Radioactive Ash

Comment # IX.D.1	Commenter: 12
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"I want to talk about one more issue with regard to this project and that is the problem of ash. This project is going to generate four truckloads of ash a day. There are reports that talk about what the makeup of that ash is when you burn trees that were grown in New England; and, that is, that those trees have a high radioactive content, and they have that content because they've absorbed radioactive cesium and strontium from nuclear tests that happened in the Fifties and Sixties. And when those trees die and they were left to decay in the forest, that strontium, that radioactive stuff dissolves into the dirt, it's in the soil and is reabsorbed by new trees. It doesn't disappear, it doesn't go away. When that wood is burned, the radioactive materials remain. They're not -- you know, what was it that Einstein said, materials are not -- matter is not created or destroyed. It's not destroyed. It remains. It's just concentrated in the ash.

There is an article, and I cite it in my testimony, an article from 1991, and admittedly it's an anecdotal argument about someone who is in charge of environmental testing for the Yankee Atomic Electric Company, so he had access to an environmental lab. He took ash from his home fireplace and tested it in that environmental lab. And, let me see, he determined that the concentration of radioactivity in that ash was easily -- oh, he lives someplace in Central or Western Massachusetts, I'm not sure where.

Anyhow, the concentration of radioactivity in ash from New England wood was easily 100 time greater than anything our lab, this is the Yankee Atomic Lab, had ever seen in its environmental samples. That's pretty scary. We may say, well, that was in 1991, maybe there's better science.

I also referenced in my paper a more recent article. I think it's in June of this year, where there's a proposal to plant trees or some kind of plants around the contaminated sites in Chernobyl. The idea was that plants would absorb the radioactive material from the soil and then all you have to do is rip up the plants and you've taken away the radioactive substances. And the plan was then to take those plants and use them to create biofuel. And, also, that sounded pretty good, but then you still got the residue from after you've squeezed the biofuel out of those plants, you still got the residue.

And then the next step was, well, we'll just burn that residue. And they said, ah, but what do we do with the ash? And they've got to treat it like medical waste. Radioactive medical waste. And then they said, gee, we have no place to deal that quantity of medical waste. So the project was shaky because of that.

You have in the draft permit, you imposed some requirements that no ash flow, flow off or otherwise contaminate the water, but I submit that there's winds that blow out here, and there'll be a windy day in the fall and then one of those ash -- one of those trucks laden with ash is doing to drive along on that road we heard about, parallel o the river, and the wind is going to blow that ash into the river, and it's going to be radioactive ash.

Where are the trucks -- by the way, where are the trucks taking that ash? The trucks are taking that ash someplace where it's going to be used as liming agent, as a fertilizer for plants. Well, I don't know who's going to take radioactive liming agents to grow their garden, their fruits and vegetables. I think it's an iffy proposition. I think the Russell Biomass needs to come up with a better plan, including a plan to house that radioactive waste on site. We're going to have it just like the nuclear power plants have on-site storage for radioactive waste because they don't know what to do with it, and it's not going out to the Yucca Mountains.

And so you've got a problem with that, with that waste, and I think that you need to deal with it because it is a waste from it that's going to go into the river and also contaminate the river. If it flows in the river upstream of the dam, it's going to settle in that pool that we've heard about, that mill pool upstream, and just lie there with the silt and accumulate until the silt blows."

Comment # IX.D.2	Commenter: 12
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"Dust and debris from the ash is of particular concern, because of the likelihood that it will be radioactive. In this case, the Developer's plan to use the ash as an agricultural fertilizer -- "as an agricultural liming agent and soil amendment " FEIR, p. 13- , is unrealistic. Combustion of trees grown in the eastern United States reportedly produces ash with high radioactive content. Raloff, Radioactive Waste From Nuclear Tests, Science News (Aug. 10, 1991). Apparently trees grown during and after the 1960' s and 70s in the northeastern United States accumulated radioactive substances (radioactive cesium , in particular) from nuclear fallout generated by nuclear weapons tests in the American Southwest. Radioactivity levels are therefore significantly higher in the ash from New England trees than is found in ash produced by other fuels. According to this article, the concentration of radioactivity in ash from New England wood "was easily 100 times greater than anything (our lab - the Yankee Atomic Electric Companies environmental Lab in Boston) had ever seen in an environmental sample. " The radioactive cesium in trees that die and are left to decay is subsequently absorbed by younger trees growing at the site. The problem does not go away. A recent article in New Scientist describes a proposal to use rapidly-growing plants to absorb radioactive

substances contaminating farmland around Chernobyl, use these plants to produce biofuel (ethanol), and thereafter burn the remaining plant material, producing radioactive ash. The challenge: what to do with the radioactive ash. See, "Biofuels could clean up Chernobyl' badlands " June 27 2009(<http://www.newscientist.com/article/mg20227144.500-biofuels-could-clean-up-chernobyl-badlands.html>). The Russell Biomass Project's continued reliance on use of combustion ash for agricultural purposes under a to be-obtained " Beneficial Use Determination" (NPC, Table 2-2 at p.2-8) is unrealistic in light of the likelihood of high radioactivity levels in ash from locally grown wood as fuel. The Project Proponent should be directed to address the consequences of generating tons of radioactive wood ash daily from the proposed facility, the transportation of that ash over local streets in Russell and public highways, and the appropriate disposition of that ash. The Project Proponent should also be requested to assess whether facility operations may result in any radioactive ash entering the plant's wastewater flowing into the Westfield River, or drifting into the river on the wind, and the consequences of such releases."

Response # IX.D.1-2	Commenter: 12
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EPA acknowledges the commenter's concerns involving ash generated at the Russell Biomass facility. *See* RTC's VI.A.7 and VI.A.8.

E. Odor

Comment # IX.E.1	Commenter: 14
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"... We have a sewage treatment plant and the water is discharged back into the river. Now, they're withdrawing water, and I know for example in Westfield on the corner of Mainline Drive and Main Street, at low-flow periods there's a horrendous smell, and I'm hoping that's not going to happen in our town. You need a certain flow of water where you have the discharge from the sewage treatment plant, and I'm wondering how this is going to effect that, because we don't want the odor that they have in Westfield. Of course, we don't want the plant to be built, period, but -- well, anyway."

Response # IX.E.1	Commenter: 14
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The maximum withdrawal allowed is less than 0.2% of mean annual flow and approximately 7% of the 7Q10 low flow. EPA determined that this withdrawal will have minimal impact on the river. If the RB withdrawal is subtracted from the Russell Waste Water Treatment Plant's (WWTP) 7Q10, the resulting dilution factor changes only slightly (ie., the dilution factor 61.6 changes to 57.9). EPA does not anticipate that the RB withdrawal will have an effect on odor, if any caused by the Russell WWTP. *Also see* RTC's in Sections IV.B and IV.C.

F. Cancer

Comment # IX.F.1	Commenter: 10
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"Some people think that it's not very important to have aquatic life in a river. The way I try to look at it is our population is growing and the demand for food is getting greater and more and more people are thinking that salmon is a good food to eat. You've got to think deeply about where we've come from over the years and what has happened to our fisheries and what this plant would do to us. I'm going to give you an example. Back in the eighteen, nineteen hundreds we had these mills and plants down in Boston and they were producing all these chemicals, harsh chemicals, mainly the ones called PCBs, and they were dumped into the rivers, the Charles River, and you know that they're still there."

And, of course, along come these fish called flounders. Everybody know how nice they are. You see them in the supermarket, you buy them. But even flounders, they need to, in order to complete their life cycle, they have to have brackish water to reproduce. They need basically fresh water. So they come up into the Charles River and what do they do? They breed and everything, and they have a little nasty habit, they like to eat. So where did they get their food? Well, they eat these little worms that come out of the muck and the PCBs, and these little PCBs, they get into the fish. And what do you think happens to the fish when they get into the ocean and sold? These fish, these little parasites that got into the fish cause cancers. So these cancers are in, can happen in the fish, and it's brought in by these harsh chemicals.

Well, you look at -- you start saying, well, you know, we got this Westfield River and we've got these pollutants all into the river, and these are going to, in my mind, it's going to be a subtle thing. We won't see people dying of cancers next year, but 10, 15 years down the road, you're going to see people come up with some kind of cancers, forms of cancers. So it's really kind of essential when you sit there and you say, well, maybe we got to clean up the rivers and we've got to make things much better, because our children down the road are going to be able to, you know, have a better quality of life, if we're able to do this. So I think it's very important and I'm sure a lot of people in this room think it's important to take care our natural resources."

Response # IX.F.1

Commenter: 10

EPA considered the potential toxic effects of the proposed RB discharge and included appropriate limitations and requirements to protect the water quality of the Westfield River, including requiring Whole Effluent Toxicity (WET) testing to regulate any potential synergistic toxic effects. After careful and extensive consideration of the materials pertaining to the proposed Russell Biomass facility, EPA believes that compliance with the Russell Biomass Permit will protect the high water quality of the Westfield River.

G. Truck Traffic, Transportation and New Proposed Road

Comment # IX.G.1

Commenter: 06

"New Proposed Road. Another discharge would be from the new proposed road that would be situated adjacent to the river. Again, dust and ash are a major concern, in addition to petroleum related constituents from the trucks. All stormwater from the road should be collected and routed to the WWTP."

Response# IX.G.1

Commenter: 06

At the writing of this response to comments document, EPA understands there has not yet been a decision concerning the access route adjacent to the river. However, storm water from proposed roads is addressed through the State's EIR process and not within the scope of this NPDES permitting action. *Also see* responses to comments on stormwater, Sections VI.G and VI.H.

H. Other Forms of River Contamination

Comment # IX.H.1

Commenter: 12

"One further comment -- the problem of dealing with sawdust and radioactive ash. The draft permit sets up what is probably an aspirational requirement that "wood chips, sawdust, waste ash, and other wood related debris shall not enter the Westfield River from the facility or any runoff area." Section

11, paragraph D. When wood chips or pellets are delivered and dumped from trucks, when wood fuel is moved around the site by a front end loader, when waste ash is collected and dumped into trucks, or when waste ash trucks are driven away, and it is a windy New England day, some of that fine particulate matter will be blown onto the river. While the Developer assures that it will be careful, I submit that even a high degree of care will not prevent releases of particulate matter onto the river.”

Comment # IX.H.2	Commenter: 06
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“Potentially Contaminated Wood Chips Stored Outdoors in the Floodplain. The proponents plan to store wood chips outdoors, uncovered, directly adjacent to the river in the floodplain. They intend to include pallets and boxes in the fuel, which are not clean and green as falsely claimed by the project proponents. Contaminated pallets cannot always be visually distinguished from uncontaminated pallets. See Attachment 1 for documentation of the hazardous constituents that find their way into pallets, and consequently, would also make their way into the ash when burned. Hazardous chemicals, many of which are toxic to fish, would enter the river via stormwater runoff, dust from wood chips and ash, and stack emissions. During times of flooding, impacts could be catastrophic. The inclusion of contaminated wood chips in the fuel, the uncovered storage, and the storage of wood or ash in the floodplain should all be prohibited. Fuel should not include any post-consumer wood of any kind, and fuel and ash should be extensively tested by an independent third party for a wide array of analytes. Surrounding air should be extensively sampled and analyzed by an independent third party for dust and hazardous constituents. All stormwater from the fuel storage area should be routed to the Russell wastewater treatment plant (WWTP).

Another reason that the wood fuel should be stored under cover is that when wood chips get wet they can (ironically) catch on fire and burn for weeks, with obviously uncontrolled emissions that will mix with rain and water vapor (if wet cooling were to be foolishly allowed) and make their way into the river. This phenomenon has been documented at at least 2 wood incinerators in Maine (for 5 weeks and 7 weeks) and 1 in Vermont (during many summers).”

Comment # IX.H.3	Commenter: 06
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“Water Vapor Discharge. Another discharge, if wet cooling is foolishly allowed, would be copious amounts of vaporized water that could pick up contaminants, e.g., from stack emissions and fuel and dust storage, and make their way into the river. The project proponents to date have ignored this issue as far as I can tell. This possibility needs to be addressed and prevented from happening. Dry cooling is the answer.”

Response # IX.H.1-3	Commenter’s: 06 and 12
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EPA acknowledges the concerns of these commenters. *See* responses to comments VI.A.3 regarding concerns that vaporized water could pick up contaminants; VI.A.7 for the discussion of radioactive ash; VI.A.8 which responds to concerns that particulate matter might be blown onto the river; and IX.I.1 regarding contaminated wood chips. *See also* Section VIII.B for responses to requests that EPA require dry cooling.

Page 12 of the Fact sheet explains that “[s]tormwater will be collected separately and treated for solids removal through detention/infiltration basins equipped with sediment forebays prior to discharge.” This includes stormwater from the fuel storage area. EPA believes that this treatment should be sufficient to not cause or contribute to the violation of water quality standards.

EPA understands that concerns regarding wood storage have been addressed through the town Fire Marshal. RB has explained that the wood piles will be of limited size and operated to reduce the amount of time the wood chips are stored before use. In addition, EPA was informed that the wood storage areas are not within the river's floodplain.²

I. Post-consumer Wood in Fuel

Comment # IX.I.1	Commenter: 06
<p>“Russell Biomass made a written agreement with the Town of Russell to burn 100% “virgin wood” that explicitly excludes pallets and other post-consumer wood. Now, Russell Biomass reneges on that agreement by expanding the range of fuel to be burned to include “wood fuel” as defined in 310 CMR 7.00. If this facility is to go forward at all – and I hope it doesn’t for a variety of reasons outlined below -- Russell Biomass not only should be prohibited from burning construction and demolition wood, they should be prohibited from burning any post-consumer wood. Pallets are not green fuel even though the MADEP “wood fuel” definition contains not only virgin wood, but waste pallets. Unfortunately, the state made a mistake in including waste pallets in its definition of “wood fuel.” In time, this problem will no doubt be recognized and corrected. In the meantime, it is unreasonable to subject people, animals, air, and water in the vicinity of the project to hazardous chemicals from pallets because of this unfortunate error. Chemicals can be added to pallets intentionally and unintentionally – intentional in the case of pallets from China that must be heat treated, fumigated, or treated with wood preservatives prior to departure from China to prevent the importation of non-native insects, including beetles that threaten our forests – and unintentional in the case of spills onto pallets. The FEIR says that pallets marked as having been chemically treated will not be burned. However, there is no third party enforcement or sampling plan. The “honor system” is inadequate. The temptation may be too great for people to just throw contaminated pallets into the chipper. Unintentional chemical contamination could be a significant problem. I recently went to a Walmart store to look into the issue pallets. A knowledgeable assistant manager at Walmart told me that spills onto pallets occur routinely. In his experience at a Walmart store, on average, 5 pallets per day are contaminated by spills. All sorts of things spill on pallets as items shift, and as the weight of overlying items crush containers. Liquids can include bleach, strong cleaning agents, flammable liquids, paints, solvents, pesticides, anything in liquid form. Powders can include pesticides, etc. There is a whole system set up to address spillage. Spilled liquids are picked up with absorbents, which are then segregated into color-coded 5-gallon containers (depending on whether the material is flammable, combustible [aerosol cans], or reactive). Pesticide spills must go in dedicated containers, as must bleach spills. Which container is determined by coding on the packaging of the spilled material. The drums are shipped off-site as hazardous waste under hazardous waste manifests, transported by licensed hazardous material handling companies. I asked if pallets that had been subjected to spills would be able to be identified visually. More often than not, there would not be visible evidence unless the spilled material was oil or paint – partly because pallets are stored outside. He also said that many companies -- like Walmart, Stop & Shop, Home Depot, Proctor & Gamble, and Target – widely use blue painted pallets such as those depicted in photographs attached to my DEIR comments. These pallets he said are chemically treated, but he didn’t know if they have a</p>	

² Personal communication between Doris Atkinson, Tighe & Bond and Sharon DeMeo, EPA on April 5, 2010.

stamp saying they are chemically treated. He thought it likely that these are not made in China, as Proctor & Gamble goods are manufactured “stateside.” Pallets go back to sorting companies and are reused until they fall apart. Walmart pays \$5 per pallet, which is then refunded when the pallet is returned. The information in this paragraph is what one person told me. It certainly raises red flags, not green. MEPA must absolutely require further investigation of this major issue. So will painted and unintentionally chemically contaminated pallets eventually go in the chipper? I did not see anything in the FEIR that said they would not be used. And there is no chemical testing of the pallets planned. Once chipped, the blue paint would not be discernable. And of course, invisibly chemically contaminated pallet wood would blend right in. Painted wood has no place in the biomass plant. Chemically contaminated pallets have no place in the biomass plant. Pallets have no place in the biomass plant, period. A knowledgeable grocery store employee told me that pallets get recycled and reused extensively. She puts pallets out back and the next day they are gone. Extensive recycling/reuse means that there is a good chance a pallet will become contaminated at some point in its life. Page 10-10 of the FEIR states: “U.S.-manufactured pallets made for domestic use are not chemically treated.” This is wishful thinking and is not substantiated with any data or literature cited. Even if pallets are not deliberately treated with chemicals, the unintentional chemical treatment is a problem (i.e., spillage problem noted above). The FEIR does not say that boxes will be in the fuel mix. But if boxes were to be included (add another line to Table 1), we would have to worry about domestically produced boxes for citrus and other produce that are often treated to prevent growth of molds and mildews. A few minutes on the internet can lead to this information. There are many other implications of including chemically contaminated wood in the fuel, including impacts to health and safety of workers handling the fuel, dust and stormwater runoff from fuel piles, air emissions, and ash quality. Pallets and all post-consumer wood should be banned from the biomass plant, in keeping with Russell Biomass’ agreement with the town. If for some weird reason this cannot be done, MEPA should require the project proponents to conduct a study of pallets and potential chemical contamination and demonstrate that there is no problem. Just saying there is no problem is totally inadequate! When, as I expect, they conclude that there is a potential problem, they need to agree not to use pallets, in the form of an iron-clad legally binding instrument that holds for all time and all facility owners.”

Response # IX.I.1	Commenter: 06
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The NPDES program authorized by the Clean Water Act regulates the point source discharges of pollutants to surface waters and the intake of cooling water. Issues related to the use of wooden pallets and other post consumer wood products are outside the scope of this NPDES permitting action. Nonetheless, EPA is concerned about the possible stormwater runoff from fuel and ash piles. The Final Permit (Part I.A.4.h) requires two priority pollutant scans performed on the storm water discharge from the RB facility. *Also see* RTC VI.G.12.

If, however, information becomes available that Russell Biomass is burning contaminated waste pallets, EPA may require additional sampling through its CWA 308 process. Furthermore, EPA can modify RB’s NPDES permit to include monitoring requirements for pollutants not currently considered or limited by their permit, which have a potential to cause or contribute to violations of water quality standards.

X. Comments on Fact Sheet

Comment # X.1	Commenter: 31
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“Attachment C to the Fact Sheet has an explanatory note (#3) stating the chemicals for the closed cooling system will not be added daily, but the Fact Sheet at page 12 says there will be daily additions (a nightly shock chlorination). Clarification is needed.”

Response # X.1	Commenter: 31
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These two references in the Fact Sheet refer to separate/different cooling systems that will operate at the RB facility. Attachment C to the Fact Sheet is a water balance flow diagram provided by the Permittee, depicting the flow of water into and wastewater out of the proposed facility. The explanatory note (#3) refers to the internal closed-looped cooling system which will be used to cool pumps and other equipment at the plant besides the condenser. On the other hand, page 12 of the Fact Sheet describes the mechanical draft “closed-cycle” cooling tower system which the Permittee proposes to use to cool and recycle water from the condenser. This system is represented on Attachment C as the “cooling tower”.

Comment # X.2	Commenter: 31
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“According to page 11 of the Fact Sheet, suspended solids will be removed in the raw water clarifier by the addition of a coagulant/flocculant. The actual chemical has not been identified, nor has the disposal of the chemicals been explained. Please elaborate. Additionally, it appears as if aluminum has been completely eliminated from the chemicals that will be discharged, but it is not entirely clear.”

Response # X.2	Commenter: 31
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In order to investigate ways to reduce and/or remove aluminum from the discharge, EPA requested that the Permittee evaluate alternative coagulants used in the raw water treatment process, which do not contain aluminum. The April 24, 2009 Supplemental Information package from RB lists four alternative coagulant products that have been used successfully at other facilities. These materials are: acrylamides; polyacrylamides, ferric chloride, and ferric sulfate. EPA determined that the use of these substances should not generate the potential to cause or contribute to an excursion above water quality criteria. Russell Biomass also explained that “until such time as full scale testing can be completed, using source specific water and facility specific settling equipment, it is preferable to have a range of proven alternatives approved for use.” EPA found that this was reasonable. However, the commenter is correct; the actual non-aluminum containing coagulant to be used at the facility has not yet been chosen and therefore is not considered approved for discharge in accordance with Part I.A.6.a of the permit. For clarification purposes, Part.I.A.6.a has been changed by adding the following: “The Permittee may propose to conduct feasibility studies involving new chemicals not currently approved for water discharge, *including any coagulants proposed as part of the incoming water treatment system.*”

Most of the coagulant that will be added to precipitate solids will settle during the raw water treatment process and then be removed off-site as solid waste. The Draft Permit at Part I.A.6.b requires that “[n]o water or waste water treatment chemicals shall contain aluminum or aluminum compounds.” This provision is carried over to the Final Permit.

Comment # X.3
Commenter: 25

“Russell Biomass notes a few minor points of clarification. On pages 43 and 46, the maximum withdrawal pumping rate is incorrectly identified as 1,000 gpm. However, the withdrawal rate is correctly identified in the permit as 750 gpm.

For clarification, that the maximum withdrawal for a day is less than the 1.08 mgd (1,080,000 gallons per day) associated with the pumping rate of 750 gpm (see page 40). The maximum total withdrawal for any one day is 885,000 gallons per day.

Also, as noted previously, the Outfall numbers that EPA has assigned to various locations are different from the Outfall numbers Tighe & Bond had assigned. Therefore, the outfall numbers on the figure in Appendix C do not match with the Permit Outfall numbers. For ease of reference, the following table has been prepared for cross-referencing Outfall numbers:

Outfall Description	EPA Designation	Tighe & Bond Designation
Cooling Tower Discharge	001	002
Low Volume Wastes	002	Part of 003
Boiler Blowdown	003	Part of 003
Northern Stormwater System	004	004
Southern Stormwater System	005	005
Combined Outfall at River	None	001
	(recommend 006)	

Response# X.3
Commenter: 25

The Fact Sheet at page 46 states that “[t]he Permittee estimated an approach velocity at the CWIS of 0.19 feet per second, based on a proposed maximum pumping capacity of 1,000 gallons per minute. The Draft Permit limits pumping capacity to 750 gallons per minute, which will result in a lower approach velocity.” This description was taken from page 10-4 of the Draft Environmental Impact Report and Notice of Project Change, dated June 2007. The other clarification points have been noted. Since the Fact Sheet is a final document and cannot be modified, this response to comments document provides a means of correcting and/or clarifying any inconsistencies between the Fact Sheet and the Final Permit.

XI. General Commentary and Opposition

General Commentary and Opposition Section XI.A

Comment # XI.A.1

Commenter: 09

“The chemicals, we already have proven that chemicals are adhering to our water supply. It's already been proven and noted that plastic in baby diapers is already attached to the water molecules. It's been proven in many reports, even from you guys, that your medicine, everybody thought flush it, it goes away, and that's adhering to all of the water molecules, again. So in a few years it's going to be a matter of we're going to have to treat the water in order to be able to drink natural water. And we need -- why add to it? Why add to that pollution, why add to that problem? Do not make Russell a contributor to polluting our planet.”

Comment # XI.A.2

Commenter: 18

“... from Russell, just across a couple of streets down from where the river goes... I grew up in Somerville, right next to the Mystic River. I know what a really dirty river looks like. Certainly, I never saw in all the time that I was growing up there and my family still lives there, anybody swimming in it. Most of the people don't fish in it, you kind a walk around it. I don't think we want that for here. I know we don't want that for here and I know that I moved out here so that it wouldn't be there. That said, one of the most profound things I ever heard was from Ellen Moyer at the DPU hearing, where we were talking about a lot of the testimony that was down there, and it always struck me, it was very simplistic, but it's incredibly profound, fish don't know averages. They don't know an average water, they know water or no water, they know clean water or dirty water. They know the right temperature or not the right temperature. And I think putting all of the other stuff aside, that's what we're looking at. We're looking at not living in Boston or Somerville, we're looking at Russell, we're looking at the Berkshires, we're looking at a fabulous place to live, and we're looking at fish who want us to protect them from the averages. They want water all the time, they want the appropriate temperature all the time and they want clean water all the time.”

Comment # XI.A.3

Commenter: 26

“The Westfield River is a local treasure and the people of this area will not tolerate any harm coming to it. For many reasons, we feel that this proposed Biomass plant should not be constructed in Russell nor any others built elsewhere in Massachusetts. However, if it is constructed, it must adhere to the strictest safeguards to protect our air, our river and our quality of life.”

Comment # XI.A.4

Commenter: 26

“We are property owners and taxpayers in Montgomery, which is the next town east of Russell, MA, the site of the proposed Biomass power plant. We are very concerned about how the Westfield River will be affected by this plant.”

Comment # XI.A.5

Commenter: 28

"I'm the parent of three children who have reared Salmon at the Becket Washington School and released them upstream of Russell into the West Branch of the Westfield River in the hopes that they'll return someday.

The Westfield River, as many of you know, has been given the distinction of being Massachusetts' first ever river to receive the wild and scenic designation. 78 miles upriver from Russell, is honored with this distinction. The wild and scenic system was formed, it was established in 1968 by the U.S. Congress to protect outstanding rivers from the harmful effects of new federal projects.

I would like to have faith that that Russell Biomass will honor their pledge to have little impact on the river, on the river's health. But forgive me for doubting them. This claim that they would receive their wood by train, by rail, that turned to truck traffic; that they needed to be asked not to discharge aluminum or chemicals into the river, things that would find their way into the river, and that they didn't recognize the result of heated water on aquatic life, this makes me feel very uneasy.

I understand the need for energy, for alternative energies, and I applaud those who pursue true alternative clean energies. I strongly suggest that the agencies that you represent, agencies responsible for environmental protection, permit only those companies and projects that produce more benefits than drawbacks to the local communities and to the water on which they depend."

Comment # XI.A.6	Commenter: 28
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"When we look back at the energy produced and the shift in where we will receive our energy in the future in Massachusetts, I hope we're proud of the direction that we moved in as a state. I hope we realize in time that we were wrong to include Biomass in our list of what is considered clean energy alternatives.

I am also a puppeteer, and I was asked to create a puppet show about water and watershed dynamics by the Westfield River Watershed Association, who oversaw its content. I was given grant funding by the wonderful agency, the Highland Community Initiative that is here to help teach people and to be proud of where they live and what they have and how to take care of it.

I have had the pleasure of performing for over 4,000 children in the Westfield River Watershed. Children in the Westfield River Watershed will now understand watershed dynamics in a way that I didn't until I was in my forties. In a way that the Russell Biomass plant designers do not. I hope they can continue to be proud of the choices that their state is making in its commitment to water and air quality."

Comment # XI.A.7	Commenter: 31
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"1. Overall, CRWC commends the EPA. We found the draft permit to be quite protective of water quality, and the Fact Sheet extremely detailed. In reviewing the draft permit, however, we have several questions and issues to bring up, as described below..."

Comment # XI.A.8	Commenter: 31
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"The facility discharges to the Westfield River, one of the major tributaries to the Connecticut River. The segment of the Westfield River where this facility discharges is listed in the Massachusetts Integrated List of Waters as being impaired due to "cause unknown;" taste, odor, and color; noxious aquatic plants; and turbidity. Upstream of this

facility, 78.1 miles of the East Branch, Middle Branch, and West Branch of the Westfield River are recognized as a national Wild & Scenic River. Migratory fish passage is being reestablished at all dams on the Westfield, including a future installation at the dam located at the facility. CRWC is particularly interested in improving water quality in the Connecticut River watershed so that its rivers can support existing primary and secondary contact uses and habitat values. Russell Biomass is a new facility and therefore the new permit warrants our close attention.”

Comment # XI.A.9	Commenter: 16
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“I currently reside in the City of Westfield. I did live in the Town of Russell for 32 years, and I have seen the ruination and destruction of the Westfield River. I have also seen all of the manufacturing plants that caused the pollution and all of the things that ruined the river disappear from a manufacturing base to now it seems like a service based economy in our river valley.”

Comment # XI.A.10	Commenter: 16
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“As young kids, we swam in that river. It wasn't good for us. You know, there was a lot of rashes and stuff like that. We fished in that river. We learned about the places where the water was cold in the summertime and if we wanted to catch fish, we would go to them places and we were taught to release the fish, so that it -- you know, it was quick catch and trying not to stress them out too much.”

Comment # XI.A.11	Commenter: 12
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“If the draft discharge permit EPA has circulated for review were issued without change, we believe it would result in serious harm to the native brook trout and juvenile Atlantic salmon in one of Massachusetts' premier coldwater fisheries, the Westfield River reach between Russell and Westfield.

Comment # XI.A.12	Commenter: 19
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“Finally, a personal note. I have lived in this town for 65 of my 67 years. My sons chose to live here, also. One of my sons lives right there the flow will go out at the bottom of the dam. He has two teenaged sons who chose stay here. My other son has two teenaged sons, he lives on Route 20, which will be on the truck route.”

Response XI.A.1-12	Commenter's: 09, 12, 16, 18, 19, 26, 28 and 31
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EPA acknowledges these comments and the personal examples of environmental stewardship often described in the comments. Further, EPA agrees that the Westfield River is an important public resource. EPA has considered the extensive comments it received on the Draft Permit and the spirit of environmental stewardship expressed in the comments. EPA believes that it has appropriately applied the applicable standards of the Clean Water Act in establishing the terms of the Final Permit. Given that the above comments do not include specific recommendations or objections concerning the Draft Permit's limitations or other requirements, no specific changes have been made to the Final Permit as a result of these comments.

For Comments XI.A.6 and XI.A.8, see Section IV.A & Section IV.I of this RTC document in regard to General Water Quality and Wild and Scenic, respectively.

General Commentary and Opposition Section XI.B

Comment # XI.B.1

Commenter: 11

“If we need more electrical energy production out here in western Massachusetts, we should build a oil or gas fired plant (as an interim solution until we get photo-voltaics, wind, and geothermal on line while at the same time conserving by insulating our buildings and voluntarily transporting ourselves by car pools, trains, buses, minibuses, bicycles, and scooters). And if someone could not get the oil or gas, then one should have gone with coal. The last thing you want to do is use wood.”

Comment # XI.B.2

Commenter: 09

“...we've worked hard to preserve the area. A lot of us moved out here for what it had to offer. It's a beautiful place to live. We've left the city. I was brought up in West Springfield, I was born out here, I came back here because of what it had to offer...And it confuses me why we're even talking about this, when we're supposed to be going green. Yes, there's wind turbines; yes, there's solar. I know years ago this was promoted as the way to go, but I think if you look nationwide and worldwide, you'll learn that wood incinerator biomass is not the way to go, and they're having more problems than ever, and a lot of them are even shutting down for that reason.”

Comment # XI.B.3

Commenter: 23

“I'm from the -- from Greenfield, from the Citizens -- Concerned Citizens of Franklin County, and I have some -- a larger question, issues to take up, because everyone has dealt with, I think sufficiently, with the science and the concerns, based on low flows and so forth that needed to be looked into; and also defense of the Clean Water Act is just of imminent importance. I think you should know that there is not only a political issue here, but an industrial issue. I've learned a lot in the last three months of fighting the Biomass incinerator up in Greenfield and one of the things I learned is that the industry -- if the federal government were doing its job and the state government were doing its job and requiring environmental impact studies, we would never be -- we wouldn't have to be here right now. If \$80 million hadn't been spent funding the incinerator in Washington, D.C., in the first quarter of this year, we would not be here right now. Some of the people in state government I know in Maine, they did FOIA discovered that the governor was connected to his brother, was connected to the industry, was connected to --- up in Maine, and so we need to be concerned about this. Because what we really need as citizens in this country is clean, renewable energy and conservation. Four things, conservation, wind, solar and geothermal, and those four will do it. I was just up at the Searsburg wind project, low maintenance. Each turbine provides enough electricity for 200 homes. That's a concurrent use. But, you know, our use is going down because we're getting a lot of encouragement to reduce our energy use. And more and more solar is going up. We have programs where people are helping each other install solar hot

water systems and solar voltaics. So those are the answers, not Biomass. And I think it's been a problem with the Pioneer Valley Planning Commission because I was part of that...I was part of that study. And at that time I had questions, Biomass sounds pretty good -- Bio. But, you know, we've all been in a learning curve here, and we had to learn a lot. I bet you anything that if that survey were done today, we'd see a very different result in that clean energy plan and Biomass would not be on it."

Comment # XI.B.4

Commenter: 23

"Now, we need to take this project proposal with all the other projects that are being attempted to be permitted, like Palmer, Springfield and like Greenfield, and then there's proposals for two other regional ones. One in Brattleboro and one in Fitchburg. And then I heard, even an astounding number like 12. They might even take industrial waste instead of burning it and calling it ecocubes. That's what they're calling hospital waste in Westminster. Big bales. I saw them on the train when I was going into New Jersey. Big bales of waste, and they called them ecocubes. So people, when are we going to stand up and say, no, we don't want our air polluted because it's going to make our hospital bills higher and they're not even going to give us single payer health care so we can have good health care. We're going to have to stand up and say, no, to all this. And thank you for all your courage in fighting them so far, and we're going to have to keep on fighting them. So get your friends and come out and say, no, to this. It was great coming into town tonight and seeing all these placards on lawn signs. Some were handmade, some were ready."

Comment # XI.B.5

Commenter: 22

"Biomass is a huge step back in technology and not needed. Westfield has a clean 400mw plant going in and Stoneybrook in Ludlow is adding 270mw. Biomass power is more expensive and NOT needed. There is a 1st time for everything and I request you to deny this permit."

Comment # XI.B.6

Commenter: 06

"Now, before any are built, would be an excellent time to wake up and say: **"No to biomass incinerators. Yes to growing trees."** Let's set an example for the country and the world, focusing instead on forest and energy conservation, energy efficiency, and combustion free energy."

Comment # XI.B.7

Commenter: 32

"'The Precautionary Principal' should be observed in every way concerning the proposed installation of the Russell BioMass Power Plant."

Comment # XI.B.8

Commenter: 21

"This is a highly politicized situation where some misguided environmentalists are trying to force incinerators into communities as a kind of a solution to the positive crisis in global warming, and there's some wonderful organizations in Massachusetts and really all over the world that have done tons of work to debunk those myths. I want to thank anyone at the EPA or any of the state or government agencies who understands the

situation and have taken the time to study it and see through the smoke screen of the new incinerators in the skies, and I know that there are battles going on within EPA, NEPA, RTP, the people who want zero waste and want sustainability and want to protect the environment and people who are pushing really unsustainable schemes fueled by -- to run the incineration industry. And I just want to thank and acknowledge anyone out there who is on the right side of this”

Response XI.B.1- 8

Commenter: 06, 09, 11, 21, 22, 23 and 32

While EPA acknowledges the concerns that are raised in the above comments, the issues raised in these comments are outside the scope of this permit. This permit addresses water withdrawal and discharges regulated in accordance with the Clean Water Act at the proposed Russell Biomass facility.

For Comments XI.B.1, 2, 3, 5, and 6, see Section IX in regard to Other Potential Impacts. For Comment XI.B.3, also see Section II.A in regard to the CWA. For Comment XI.B.7, see Section III in regard to Permit Procedures and Administration.

General Commentary and Opposition Section XI.C

Comment # XI.C.1

Commenter: 29

“I attended the hearing held and heard many statements made about government interference in this issue with many out-right questioning whether this project is a done-deal and these permit issues are already determined in the proponent’s favor. I hope that these are unfounded and I trust that your department will truly listen to the statements made to you and render a decision which best serves the populace and the river, itself. Your office is called the “office of ecosystem protection” I urge you to do just that and protect this river ecosystem. I appreciate your time on this matter and leave you with one final thought-we need to treat our rivers as living waters and remember as they go so too do we go.”

Comment # XI.C.2

Commenter: 05

“Now Dave Webster stated, stated when the final permit is it used, is issued, and then Bryant also said, unless issued by the EPA, final discharge permit is issued. So it sounds like we're wasting our time and their minds are already made up.”

Comment # XI.C.3

Commenter: 10

“It takes a lot of guts from board members, and people that come from Boston, to make a decision that will stop this plant. All we need is a few people to say, no, to this plant. Okay? If we have these few people that have got enough guts to say, we don't want this Biomass plant, we can stop it.”

Comment # XI.C.4

Commenter: 25

“The project description has been covered nicely by EPA and is detailed in the NPDES permit applications and subsequent materials and those are available publicly and I won't be trying to summarize those at this point. If there is need for EPA to have additional

information in response to the questions and comments received in this hearing process, we will respond to any questions from EPA in writing, as we have for the many previous questions EPA has raised during their detailed review of the NPDES permit application. The process, the review process has been really very demanding for Russell Biomass, and to be on the receiving end of it has been challenging. It's been rigorous, a thorough review, as demonstrated by the many requests, responses to requests for additional information to EPA, that have been provided as part of the application process, spanning over a three-year review at the time. For the public, I'd like to know that this review process has resulted in what we say are some beneficial modifications to the facility design to reduce the potential for a chemical discharge to the environment. Specifically, the modifications were made at EPA's request for corrosion control chemistry to -- or not for solids, control chemistry to completely eliminate the use of aluminum based compounds in the facility, specifically the head of this movement, aluminum based compounds. Additionally, as already discussed, there's been modifications to this inspection process that will substantially reduce the amount of chemicals needed for disinfection, and those kinds of inputs from EPA are greatly appreciated and will help to really make this project a better project."

Comment # XI.C.5	Commenter: 14
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"...I'm a resident of Russell, and compared to all of the knowledgeable experts that we have here tonight, and I really want to thank all of you for coming, and trying to help us to fight, to keep our river clean and to keep our river healthy."

Comment # XI.C.6	Commenter: 14
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"And, you know, I pray to God that you people will protect our river and deny this permit. Like I said, I'm just a resident, I'm not an expert, but please don't let him take our water."

Comment # XI.C.7	Commenter: 15
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"I am a Westfield city councilor and I'm here tonight to basically voice the concerns of those in my city, a city of over 40,000 people, by the way, some of them who live within five miles of this proposed plant; and basically all of them who live downstream from the Russell Biomass proposed plant. Thank you, again, for addressing some of my concerns earlier over the chemicals."

Comment # XI.C.8	Commenter: 17
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"I'm here representing the Springfield Area Sustainable Energy Association. The board of the Springfield Area Sustainable Energy Association ask that you deny this permit. We are in agreement with the findings of Attorney Meg Sheehan and Jana Chicoine, and also Glen Ayers who made some excellent points this evening ... We, again, are in opposition of this permitting and we thank you for your time."

Comment # XI.C.9	Commenter: 06
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"The NPDES permit to Russell Biomass should be denied. Is nothing sacred? A wild and scenic river that is part of the Silvio O. Conte National Fish and Wildlife Refuge?

Endangered fish that our doctors are telling us to eat more of to prevent the most serious diseases that kill more Americans than any others? The river and its fish should not be jeopardized by discharges that are totally unnecessary and whose sole purpose is to increase the profits of the project developers, as explained below.”

Comment # XI.C.10	Commenter: 06
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“As the developer’s consultant pointed out at the meeting last Thursday, Russell Biomass has been working with USEPA for years on this permit and has had extensive “face time” with USEPA. Now, at the eleventh hour, the public finally has the opportunity to weigh in and have a seat at the table. You are seeing a storm of protest, and the draft permit needs drastic changes if it is ever to pass the “straight face” test and be accepted by the public.”

Comment # XI.C.11	Commenter: 06
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“In Summary: This project helps no one but the project developers/owners. Particularly in the absence of a public benefit, negative impacts to the wild and scenic Westfield River and its endangered fish are simply not acceptable. **The following at a minimum are needed**: zero liquid discharge; stream gauge; river steward with sole discretion and authority to invoke shut down of the incinerator; extensive sampling and analysis of river water, wood fuel, ash, and air; no post-consumer wood in the fuel; covered storage of fuel and ash; no storage of fuel and ash in the floodplain; runoff from storage areas, proposed road, and floor drains all routed to the WWTP; and shutdown status except during times when all is fully documented to be in order.”

Comment # XI.C.12	Commenter: 33
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“Thank you for coming to Russell, for standing on shores of the Westfield and for meeting the river that makes this landscape. I am concerned that the EPA is considering permitting the Russell Biomass to discharge water used to cool the electric utility into the Westfield River. Russell Biomass must leave the ecology of the river no worse off than before. Westfield River wildlife and quality of life issues in Russell hang in the balance of your decision.”

Comment # XI.C.13	Commenter: 27
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“The Council strongly opposes the issuance of this Draft Authorization. It believes the factual basis upon which the Authorization was issued is incorrect, and the analysis used to reach the conclusion that such an Authorization is justified is flawed. We respectfully request the Draft Authorization be withdrawn following review of the comments below.”

Comment # XI.C.14	Commenter: 36
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“The draft permit contains a number of operational limits and monitoring requirements that should act to minimize impacts to aquatic biota. By using cooling towers, the project will reduce the amount of water needed for cooling and the amount of heated effluent discharged to the river.”

Response XI.C.1- 14	Commenter: 05, 06, 10, 14, 15, 17, 25, 27, 29, 33 and 36
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EPA acknowledges the above comments regarding the public process and recommendations for EPA actions. EPA has conducted the public review process in accordance with its applicable regulations and appreciates the thoughtful comments it has received. With consideration of the comments received, EPA believes that the resulting Final Permit is protective and in accordance with the applicable provisions of the CWA.

For Comment XI.C.10, see Section III in regard to Permit Procedures and Administration.

For Comment XI.C.11, see Sections IV.E & H in regard to Stream Flow – Gauge Data and River Steward, respectively. Also see: Sections V and VI in regard to Thermal Monitoring and Other Permit Monitoring Requirements, respectively; Section VIII.C in regard to Zero Discharge; and Section IX.I in regard to Post-consumer Wood in Fuel.

For Comment XI.C.12, see Section V.E in regard to Thermal Impacts.

For Comment XI.C.13, see Section III in regard to Permit Procedures and Administration.

For Comment XI.C.14, see Sections V and VIII in regard to Thermal considerations and §316(b) Cooling Water Intake Structure, respectively.

General Commentary and Opposition Section XI.D

Comment # XI.D.1	Commenter: 19
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“I live in Russell. I support the exhaustive process that the EPA and Russell Biomass through Tighe & Bond have gone through. This facility is so carefully scrutinized that it will become a national model. This kind of exchange that we're having here today makes it a better project.”

Comment # XI.D.2	Commenter: 19
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“Several years ago, I believe it was two years ago, the Town or Russell engaged an independent consultant to review the Biomass project, and as a result some very important changes were made.”

Comment # XI.D.3	Commenter: 01
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“I joined the Russell Conservation Commission in 1971, and I'm a fisherman, as you can see, and I'm very concerned about the water quality of the river. I'm also a member of Russell First and I believe this permitting should be passed.”

Comment # XI.D.4	Commenter: 01
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“I've always been a trout fisherman and if I thought Russell Biomass was going to hurt the trout fishing, I'd be against it, but I really, really don't think so.

Response XI.D.1- 4	Commenter: 01 and 19
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EPA acknowledges the above comments that reflect support for the Draft Permit and/or the review process.

XII. Comments from Ocean River Institute Concerned Citizens

Ocean River Institute Comments Section XII.A

Please consider the damage that will occur to the eco system and wildlife in the area. There has got to be a better way. We can set a positive precedent environmental protection.

Patricia Hamilton
Eureka Springs, AR

We need to protect our Wildlife and Marine life. I want my children to be able to enjoy the Westfield River. To permit this discharge would deny future generations from enjoying scenic, clean rivers.

Marlene Vandyke
Phoenix, AZ

It is a scientifically known fact that clean drinking water is one of the world's most precious yet rapidly declining natural resources. To knowingly allow toxic pollutants into our community water resources is poor planning, poor stewardship, and only adds to the havoc we have already done to our natural resources.

Dona LaSchiava
Tucson, AZ

It really should be obvious that every creature must have clean water for life. Please stop polluting and killing the creatures that make their homes in water. It is extremely shortsighted. Many of our foods, not to mention the water we must drink, come from streams and rivers and, to begin with, from the ocean. It is a closed system, which is interdependent; so think of the big picture before you allow the destruction of water habitat.

Ms. Kirsten Speer
Tucson, AZ

Do not discharge heat or toxins into the river. Don't endanger our resources - the water and salmon.

Wendy Weikel
Berkeley, CA

Now is the time to do the right thing by re-evaluating your consideration of permitting the Russell Biomass to discharge the water used to cool the electricity utility into the Westfield River. We need to protect our natural resources and wildlife from the dangers of pollution.

Michael Sullivan
Lafayette, CA

Please protect the wildlife and the environment of the Westfield River. We must stop big business from polluting and restore our natural resources.

Roberta Parrish
Los Altos, CA

Effluent discharge from Russell Biomass will impair water quality and negatively impact fish and wildlife of the Westfield, and damage riparian habitat.

Paula Zerzan
Glen Ellen, CA

Please protect the endangered salmon and wildlife in the Westfield River. This is a vital area that deserves to be protected from exploitation and preserved for future generations. Thank you for taking immediate action in response to this situation.

Elisse De Sio
Redwood City, CA

Our increasingly fragile planet needs all the help it can get. At the least, businesses should do no harm, and should be required to help, since they're using the resources that belong to the people.

Karen Jones
Venice, CA

If Russell Biomass does not reduce its discharge into the Westfield River, it will destroy fish and wildlife and reduce our food supply.

Charles Humphreys
Cape Coral, FL

The Westfield River is nature at its best. It provides a home and food supply for hundreds of creatures in the area, it provides recreation for the residents fortunate enough to live in the vicinity and it provides refuge and an opportunity to simply commune with nature. Do not spoil the landscape and cause the death of its inhabitants.

Angela Celli-Jones
Jacksonville, FL

Please protect human and wildlife health and survival by vetoing this project. Just say No to Permit No. MA0040371 To Discharge Under the National Pollutant Discharge Elimination System (NPDES) and protect our natural resources and public health for future generations.

Jody Holliday
Key West, FL

If we are to leave the world in a habitable condition, these kinds of cause/effect relationships must be closely examined for harm to the environment. If harm is possible, especially to a food source, the action must be canceled. There are no other options for a green, clean, earth for our children to come.

Karen Burroughs
Orlando, FL

It's way past time that we take action to stop the destruction and damaging of our vital national water resources. Nothing is more important than that we protect our environment for future generations.

Donna Selquist
Port St Lucie, FL

Salmon are an important food source and must be protected.

Douglas Shumate
Warner Robins, GA

Please do not allow Russell Biomass to withdraw any more water from Westfield river or to discharge any of the contaminated water back into the river. The salmon, otter, and other Westfield wildlife should come first before a huge company that will, do nothing beneficial for the river. Their only goal is to make obscene profits, without regard for the river's health, putting at terrible risk the surrounding wildlife. Just say no to Russell Biomass!

N Jaudoning
New Albany, IN

We desperately need to protect salmon stocks. The aggregate impact of pollution, industrial trawling, global warming and dams are destroying the salmon fishery. Please think of the long term impact of contaminated discharge. We can do better than this. We must do better than this.

Jacqueline Edmundson
New Orleans, LA

[See Section VII.A-B in regard to the Atlantic Salmon]

Either we can do all we can to save & protect our precious waterways and other natural resources now; or we & future generations will become poisoned & die because of our callous actions. When we put the healthy existence of other species in needless jeopardy; we create a brutal mirror of our own future existence.

Bob Bousquet
Bryantville, MA

What little we have on this side of the state is being threatened. What we do have is peacefulness, wildlife, beauty and a river which has continued to struggle because of prior polluters. Please consider protecting this valuable resource from Russell Biomass and its potential for destruction of our river, our wildlife residents, our roads and the peace of its residents.

Katherine Coache
Westfield, MA

Please do something about Russell Biomass polluting the Westfield River. Clean water is very important to sustaining fish & wildlife, and one of our most precious resources. We must keep our waterways clean.

Linda Woodward
Old Orchard, ME

The Westfield River is a delicate part of our ecosystem. To have Russell Biomass discharge water into this river would cause significant damage to the river. I am asking you to not permit Russell Biomass to discharge their water into the Westfield River.

John Viacruis
Moorhead, MN

If we don't start protecting our natural resources now, and our plant & wildlife, we aren't going to have any left! I would really like for my granddaughters to be able to grow up with fresh water, see wild animals in their natural habitat, and enjoy nature's beauty.

Bonnie Jackson

Moscow Mills, MO

It is critical that we do everything in our power to protect this vital resource. Not enough priority is given to our rivers and their value in helping maintain the balance of nature in a pure and natural state.

Doris Carey
Cherry Hill, NJ

It is important to consider all rivers and streams as a vital part of our natural resources. I support any and all efforts to save the Westfield.

George Sidoti
East Northport, NY

Please do the right thing and prevent any poisoning of the river via the dumping of polluted water. We depend on you to help us protect our food, water, and air from companies that pollute our natural resources. The chemicals they dump are toxic. No wonder our health care is so out of control. You have the power to step up and stop the poisoning. We depend on you to protect the environment for the health of our loved ones.

Geraldine Baron
NYC, NY

At a time when aquatic life and fish species of all kinds, but especially salmon are plummeting, it seems counter-productive, if not downright insane, to cause further damage to a critical water resource. Problems created within the waterscape, are difficult, and in some cases impossible, to correct or reverse. We cannot take such a chance with the Westfield River. As goes the water, so goes life.

Arlene Steinberg
Philadelphia, PA

As an environmental law enforcement agency, it is your obligation to protect our natural resources. Our rivers have already been contaminated and degraded by pollution, agricultural runoff, and unsustainable withdrawals. Our rivers are essential sources of drinking water, wildlife habitat and recreation. I urge you to decline permit No. MA0040371 to discharge under the national pollutant discharge elimination system.

Barbara Eisenberg
Milwaukee, WI

Besides being a resident of Russell who wants the small village to stay a quiet village I am also an avid kayaker and outdoors person and am concerned about the recreational value of the river being affected as well as the wildlife in the area. There are so many reasons why the Biomass does not belong here!

Laura Stinnette
360 S. Quarter Rd
Russell, MA 01071

Response XII.A

EPA acknowledges these comments and the personal examples of environmental stewardship often described in these comments. Further, EPA agrees that the Westfield River is an important public resource. EPA has considered the extensive comments it received on the Draft Permit and the spirit of environmental stewardship expressed in the comments. EPA has appropriately applied the applicable standards of the Clean Water Act in establishing the terms of the Final Permit. Given that the above comments do not include specific recommendations or objections concerning the Draft Permit's limitations or other requirements, no specific changes have been made to the Final Permit as a result of these comments. See specific references to other applicable responses to comments in bold above.

Ocean River Institute Comments Section XII. B

What is it with the human animal? Don't humans understand that we are all connected on this planet? Whatever anyone does has a ripple effect on everyone. Instead of doing things that end up producing pollutants, do things that do not pollute. This involves each and every individual on this planet.

Jonathan Hughes
Jenner, CA

It is the responsibility of the U.S. EPA to insure that the health of Americans is their singular priority. Our health is directly impacted by the health of our natural environment and any decision made by the EPA should reject requests by Russell Biomass to further pollute our valuable and disappearing natural resources, shielding them from resource extraction and development. I strongly oppose the sacrifice of our environment to industries like Russell Biomass. Our energy needs must be met through methods that are sustainable, which do not forsake our natural lands to companies like Russell Biomass.

Tara Mulski
Los Angeles, CA

Dear EPA Administrator,

The salmon, otters, and other wildlife in Westfield River are worth more to Americans than one corporation's lack of desire to clean up its own toxic waste. Please tell Russell Biomass that it will have to get over having to spend money to clean up after itself. More of the same not only kills the natural migration of salmon and the otters and etc., but also heightens global warming. Russell Biomass is not in conformity with federal law. Thank you.

Terry Ellen Robinson
Los Angeles, CA

The sun, the moon and the stars would have disappeared long ago... had they happened to be within the reach of predatory human hands. ~Havelock Ellis, *The Dance of Life*, 1923 We never know the worth of water till the well is dry. ~Thomas Fuller, *Gnomologia*, 1732 We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect. ~Aldo Leopold, *A Sand County Almanac* The insufferable arrogance of human beings to think that Nature was made solely for their benefit, as if it was conceivable that the sun had been set afire merely to ripen men's apples and head their cabbages.

~Savinien de Cyrano de Bergerac, États et empires de la lune, 1656 When a man says to me, "I have the intensest love of nature," at once I know that he has none. ~Ralph Waldo Emerson, Journals, 1857 It is horrifying that we have to fight our own government to save the environment. ~Ansel Adams

Teresa Seward
Santa Cruz, CA

We, as a nation, have just begun to learn about river health and how rivers affect entire ecosystems. We cannot possibly enhance our understanding of rivers by using them as a bottomless pit for industrial use at the whim of an industry - returning damaged, polluted water to a damaged river bed. Building dams which destroy entire ecosystems and all of the communities which live in and depend upon them has always been controversial, destructive and, in retrospect, a poor way to achieve the ends which gave rise to them in the first place. There are now plans in many areas to destroy dams in a belatedly enlightened attempt to repair the damage. Let's learn about our beautiful and essential natural resources instead of abusing and destroying them

A Bonvouloir
Sunnyvale, CA

The clock is ticking for the future of our planet and our children. The brilliance of America's nature and wildlife has touched our lives in so many ways. It should be considered criminal to contribute to its destruction. "In wilderness I sense the miracle of life, and behind it our scientific accomplishments fade to trivia." - Charles A. Lindbergh, Life, 22 December 1967

James Sorrells
Groveland, FL

I'm just an ordinary citizen, yet I can see the writing on the wall. I can understand the grave environmental damage that has already occurred, and it's not even my specialty. Government agencies acted irresponsibly towards the environment during the Bush administration. Having Obama in the White House enables EPA to do what you do best, Environmental Protection. No more back-room deals with corporate clients and/or their well-heeled lobbyists. Do what is right for salmon in the Westfield River! and not for industrial utilities.

Jane Cone
Ruskin, FL

I voted for change, not for continuation of the Bush/Cheney dynasty. The environment, wildlife, etc., are not here for the benefit of corporate America. Stop this plan.

Doug Landau
St Petersburg, FL

This river has come a long way since I grew up in the 60s. It would be a travesty to let Russell Biomass ruin almost 50 yrs of cleanup to benefit a private enterprise. We don't even need the electricity as Westfield has 8 types of clean energy coming on line. Biomass is a misuse of taxpayers money under the false label of green energy. These plants are incinerators and nothing more. We need more wind and solar and hydro.

Joe Malcovsky
Russell, MA

I don't think factories, power facilities (of all types), manufacturing facilities, and agri-business should even be allowed to open their doors until they have an ecologically sound way to deal with their waste. The expense, destruction, and disease created by letting these businesses start up and run is irrational, irresponsible, short-sighted, and disrespectful. Please do not ruin an entire ecosystem.

Deborah Ellison
Austin, TX

Our environment is the canary in the mine shaft. To continue to lose to destruction impoverishes us. The mental health of people in urban areas has been shown to improve when a green area is visible.

Dirk Rogers
Dallas, TX

So another immoral corporation destroys life as we know and need it. Why not destroy the corporation for a change. We can find other work and other ways to create energy.

Pauline Warren
North Ogden, UT

The future is solar thermal - which will not destroy our food supply, waterways and livelihoods or quality of life.

Paul Burke-Journey Home
Virginia Beach, VA

Response XII.B

While EPA acknowledges the concerns raised in the above comments, the issues raised in these comments are outside the scope of this permit. This permit addresses water withdrawal and discharges regulated in accordance with the Clean Water Act at the proposed Russell Biomass facility.

Ocean River Institute Comments Section XII.C

This is of great concern to me as I see so little regard for our earth and the creatures that inhabit it. We are all connected and instead of destroying our natural environment we need to save it.

Jo Anne Martin
Riverside, AL

Native salmon habitat must be protected.

Harold Robinson
Talladega, AL

We should have learned from our mistakes by now. Please do not make another mistake by letting Russell Biomass dump polluted water back into the river.

Carol Joan Patterson
Eureka Springs, AR

This is not a wise idea. Putting waste into our waterways is destructive. Short-sighted thinking has allowed corporations to gain profit at the expense of our future generations. We will have to answer to future generations and bear the guilt if we allow practices to persist which damage our streams and rivers.

Cheryl Bechtle
Tucson, AZ

I just found out that I truly love eating salmon. Please don't allow this food source to become polluted. We can't afford to lose this nutritious source of food!

Barbara Christlieb
Tucson, AZ

Do you know what will be put in the Westfield river water? Do you know how the toxins will affect the fish and people? The possibilities worry me, and they should concern you too!

Lisa Harris
Tucson, AZ

We humans are the stewards of planet earth. We can do a better job. Greed is not God's plan for humanity.

Ruth Case
Carpinteria, CA

We have a similar problem with a decline in salmon here in northern California. We need to do everything we can to protect the few salmon that are left.

Joselyn Bartlett
Caspar, CA

No excuses for harmful pollution dumping anywhere for any reason!!!

Pat Blackwell-Marchant
Castro Valley, CA

Please protect earth, sea and natural spaces from all marauders.

Karen Stegemann
Citrus Heights, CA

I live in California where the salmon population has been drastically reduced over the past few years (second year in row that the salmon season was cancelled!). It seems as if we are intent on wiping out yet another living species that is so valuable to its ecosystem. Before greed completely destroys everything that is worth saving, please reconsider your short-sighted decision.

Evan Morgan
Crockett, CA

Allowing Russel Biomass to pollute the Westfield is too stupid for words.

Laurens L. Battis III
Fairfield, CA

It would be unforgivable to allow toxic chemicals to be dumped into the Westfield River and destroy the ecosystem and wildlife within. Please do not let this happen.

Michael Dorer
Fremont, CA

[See Section VI for Permit Monitoring Requirements and Effluent Limits]

I live in the Central Valley in CA. where water is seen as a money maker. I grew up on farm and know its value. However, if we are to have good water we must keep our wild waters free. Do not burden the wild waters with pollutants.

Margaret Reynoso
Fresno, CA

Please listen to this plea. I live next to the Russian River in California. If the flow does not support native wildlife and fish, it should not be made available to others. Certainly Russell Biomass can get creative minds together to engineer an alternative solution, such as securing a viable recycled wastewater cooling system which discharges back to the source, not the river!

John Essman
Healdsburg, CA

[See Section VIII in regard to §316(b) Cooling Water Intake Structure]

Please, this is important.

Bruce Odelberg
Kirkwood, CA

How in the world can this be allowed to happen? Does no one have a conscience anymore? Who, we need to ask, is profiting by this destruction of the environment, to the detriment of the future environment and human beings, not to mention creatures.

Kaen Clarke
Lancaster, CA

Save our planet & all that dwell upon it!

April Ewaskey
Long Beach, CA

Reading the above information is very alarming. Please do every thing possible to monitor this situation and take remedial steps to correct it.

Miriam McLeod
Long Beach, CA

In the long run, every destructive and negligent action that humans take that is detrimental to our wildlife, environment and water is going to lead to a world that will ultimately not be fit for any kind of life. We are already close to the edge of catastrophe as it is unless we drastically reduce our ravaging of the planet asap.

Sara Ross
Los Angeles, CA

We have to stop killing our fish and wildlife, or there will be nothing left. Thank you for listening!

Therese Steinlauf
Marina del Rey, CA

In these dry years, more than ever we must protect our wildlife! This is much more important than any electricity we use! We would be better going without so much electricity than to go without the fish and wildlife of the river! Please do not allow this to happen!

Ruth Dicks
Mission Viejo, CA

It is so important for us all to take responsibility for our land and its resources. Why is it permissible to allow utilities to leave behind filth?

Julie Dobkin
Oakland, CA

Is it just the money or is Russell Biomass hopeful that it will kill all aquatic life?

Roderick Brown
San Diego, CA

Adding heated effluent into the river should not be allowed. Biomass is a good idea when it is environmentally neutral. This discharge is far from neutral and is detrimental to the health of the river and death to the salmon and other living organisms in the water!

Joan Hasselgren
San Francisco, CA

[See Section V.E in regard to Thermal Impacts]

The wildlife in the Westfield River will die if Russell Biomass has its way. That is the bottom line. It would be a tragedy. It would be irreversible. You cannot abuse and pollute a river's system and expect it to survive. You cannot clean up afterward. It doesn't work that way. You must Prevent the damage from happening in the first place. It's a living ecosystem. It will affect the surrounding area and spread toxicity. This is absolutely unacceptable. Please stop this disaster from happening!

Katherine Iosif
San Francisco, CA

The very essence of America is our streams, rivers, lakes, mountains, oceans and plains. Our wilderness and wildlife represent who we are as a people and a nation. These are our true heritage and legacy, and must be protected at all costs.

Kevin Moore
San Francisco, CA

You must protect the environment before money interests.

Jewels Stratton
San Francisco, CA

Allowing this waste into the Westfield will kill wildlife and ruin recreational and beautiful places for all to enjoy. Please do not let this terrible plan happen.

Tina Jaime

Save the river and its wildlife!

Gail Caswell

Sanfrancisco, CA

You cannot allow toxic discharge to be dumped in the Westfield. We are spending money to help increase the fish population, and to allow something like this to happen is terrible. Just the word "dead zone" says it all for all wildlife and people.

Eileen Bosch

Saratoga, CA

Maintaining sustainable salmon populations is certainly more important than accommodating yet another water polluter, when we should be reducing their numbers, not adding to them.

William Schoene

Santa Monica, CA

You cannot allow toxic discharge to be dumped in the Westfield. We are spending money to help increase the fish population, and to allow something like this to happen is terrible. Just the word "dead zone" says it all for all wildlife and people.

Eileen Bosch

Saratoga, CA

We need to safeguard our environment and not kill off existing fish.

Angela Black

Seal Beach, CA

I can't believe that this permit would even be considered. We have destroyed already toomuch in this world. Please, don't do this.

Celeste Chase

Shasta Lake, CA

Please save our wildlife. We speak for those who can't. All creatures big and small deserve a place on our earth.

Lorraine Gilbert

Signal Hill, CA

P.S. I Love Wildlife love Brandon M Bean. Thank you for helping to save these executives why saving the Westfield River. Thank you for considering my comments. I look forward to your swift action to prevent Russell Biomass from polluting the river.

Brandon M Bean

Thousand Oaks, CA

Why are we constantly having to fight just to do what any sane person knows must be done - protect our planet and the life on it.

Ruth Sander
Ukiah, CA

It is time to protect the wildlife that depends on the Westfield River flow.

Barbara Daniels
Newbury Park, CA

I'm very concerned about the cleanliness of our streams and rivers. We must stop allowing businesses to discharge their waste directly into our nation's waterways. Please.

Shirley Wallack
Santa Rosa, CA

I see how bad the Colorado River is here where it has been polluted to the extent that I wouldn't go swimming in it, but we do have to drink the water.

Floyd Clark
Winterhaven, CA

I agree entirely with the content of this letter. The safety of the local eco-system is paramount, with your engineering skills I am certain you will be able to find a suitable solution to the dilemma.

Luke Payn
Peterborough Cambridgeshire

I have always cared about wildlife and it is projects such as this that make me wonder if state officials have simply lost their minds or if this river is just not important enough in their grand scheme of things to listen to the facts presented. We must protect this planet. What is lost may never be regained.

Barbara Hanson
Denver, CO

We have destroyed far too much wildlife habitat with our environmental carelessness. It's time to start preserving what we have left.

Kathryn Rose
Denver, CO

Why do this? It is, and will kill not only fish but other wildlife that use the river. This should not be allowed!! It is already hard enough for the salmon to make it up river with all the dams they have to navigate to get to their spawning grounds.

Robin Daniels
Fort Collins, CO

Our natural world matters

N W
Ft Collins, CO

Wildlife needs all the help it can get. Please put our invaluable ecosystems first and do the right thing. Thank you for your time and attention.

Jon Born
Morrison, CO

Plus - remember that we're all in this together! When you find yourself in a hole, stop digging!

Jerry Best
Penrose, CO

Progress is good, but progress that sacrifices the natural order of things is bad. Poor choice! If this effluent could be filtered and cleaned to not be risky to all the creatures including man, than the choice would be different.

Margaret J. Aldinger
Groton, CT

For too long we have used our rivers and lakes for the waste we produce without thought for how we are affecting wildlife, not to mention the ecosystems that sustain us. The time is now to carefully weigh the balance and make certain that the actions we take do no harm that will come back to us.

Guru Sandesh Khalsa
Milford, CT

To permit effluent discharge from Russell Biomass can not be good for the fish and wildlife of the Westfield River.

Kevin Gallagher
New Fairfield, CT

Please don't discharge the heated water.

Robert Daly
Willimantic, CT

Please take these letters seriously. We who send them care deeply about wildlife, recreation, climate change and the peace that comes from untampered enjoyment of nature. I have lived on or near the water all my life - I am tired of all man is doing to pollute our waters and defile the environment.

Joan Walker
Bell, FL

We have brought this planet to the brink of total devastation and destruction. Environmental health must become our top priority.

Sharon Russick
Boca Raton, FL

Please do not pollute the Westfield River.

John Cielukowski
Cocoa Beach, FL

As a resident of Florida, a state extremely dependent on its many waterways, I know what the impact can be of the contamination and abuse of this natural resource. We must act responsibly when making decisions which allow companies to affect the long term ecology of our rivers.

Jeanne Albertus
Coral Springs, FL

It's vital to survival of the salmon species and life of the Westfield River that the Russell Biomass not be built. This is a moment in which it must be said, "Enough." Consideration for the planet and our children must come before profits.

Martha Milne
Ft. Myers, FL

Please help Mother Earth or there won't be a Mother Earth to protect and none of us will be around to enjoy life!

Carol Hill
Hialeah, FL

It is my belief that we should be working on saving and re-establishing our natural environments, not adding to the destruction we have already created.

Suzette Morrison-Kunkle
Hollywood, FL

If we allow this kind of action to continue then pretty soon there won't be any clean water left. If that happens, all the animals that inhabit, or drink from this river will die. We can't let this happen.

Because if we do, it won't stop until all life on Earth is gone. Sincerely/respectfully,

Ms. L. Carmel
Jacksonville, FL

Our rivers are not the nation's toilet. They should be clean enough to swim in.

Ross Kelsonpetit
Miami Beach, FL

Our planet is in the most fragile condition ever. We must preserve what we have and keep it from further pollution and erosion. Without a healthy ecosystem man and all living creatures will not survive.

Lee Myers
North Port, FL

Let's come up with another solution which protects wildlife, the river and particularly the salmon.

Judith Peter
Port Charlotte, FL

Find another way to discharge the toxic waste. If the techniques they use produce enough material to poison this river for all time, then these techniques need to be changed for all time.

Susan Steinbach

Sebastian, FL

[See Section VI for Permit Monitoring Requirements and Effluent Limits]

Thank you for seriously considering this request. We simply cannot allow wanton pollution of our waterways any more.

Nickie McNichols

St Pete, FL

Dear Sir, Don't let Russell Biomass dump their hot water into the river. This would kill all the salmon in the river.

Benjamin L.Dugger

St James City, FL

For the first time in years, recent EPA actions have begun to bring what was previously a "rubber-stamp" agency for corporate polluters back into line with the desires of the American people for a clean, livable environment. Please don't undercut this praiseworthy initiative by returning to the heavy-metal pollution laissez-faire of the past. Continue to become an agency that serves all Americans, and of which all Americans can be proud.

Armida Gilbert

Decatur, GA

What does it take for you to what is right. Is money the only thing that works in this country?

Norman Hoffman

Marietta, GA

Please make the right choice now...people must stop destroying everything in their path!

Lynn Sajdak

Smyrna, GA

Once severely damaged, the waterway and life in it will take a long time to recover, and may never recover.

Francis Akamine

Hilo, HI

With the escalating effects of global warming and the growing importance the role of water conservation must take, I am amazed that any enterprise is still allowed to use our precious water as a coolant, when other alternatives are available.

Virginia Bennett

Honolulu, HI

[See Section IX. A in regard to Global Warming]

Every effort should be made to encouraging an increase in the salmon population. Dumping polluted water into the river is hardly the way to do it.

Jerome Peltier

Ames, IA

Please save the salmon run. Thank you.

Ellen DeLashmutt

Fairfield, IA

We humans have been doing it the easy way, earthwise, for centuries. Now there's too many of us and we are far too busy doing stuff for anyone to do it the easy way anymore. Now we must do it the right way, the hard way.

Chuck Mitchell

Keokuk, IA

To release pollutants anywhere, anytime in areas where wildlife gestate, give birth and live is akin to allowing the infiltration of toxins into the milk your baby drinks. No good father, mother or caretaker would even think of doing this. We are the caretakers of the Earth, without which and without the fish and animals living on it, we will all die. Think of that before you poison the waters that sustain us all.

Ruth Hosek

Addison, IL

Whenever possible, we need to pay attention and stop pollution before it starts!

Mary Baechle

Cary, IL

Stop polluting the Westfield River. Have you heard of the greening program? Without good clean, unpolluted water our country will be destroyed!!

Jo Laz

Chicago, IL

Jobs can be made besides dam building; longer term jobs like wildlife maintenance.

John Mattinen

Chicago, IL

I care deeply about innocent wildlife, which suffers at the hands of merciless humans. To endanger the river wildlife like this is a heinous act.

Margaret Krause

Elgin, IL

The health of Atlantic salmon affects people throughout the US. The EPA should take every step possible to protect these fish from toxins. Your agency should know the harm that Russell Biomass discharge can do to all water species. Thank you.

Cathy Caldie

Columbus, IN

I cannot understand why the agency charged with protecting the environment would permit such a dangerous proposal. No river can handle such a major discharge and a major withdrawal. With a

changing climate and a real risk of more drought and more hot summers, the risk to the river and its wildlife is even greater. Please reconsider this ill-advised permit.

Susan Ebershoff-Coles

Danville, IN

[See Section IX.A in regard to Global Warming]

Hey, news flash - we have very little clean drinking water left. We cannot allow further pollution of the water supply!

James Carrell

Elkhart, IN

We must somehow save our enviroment, or how ignorant are we?

Dave Phelps

S Greentown, IN

I care about all these issues for our and future generations. Do we really want our grandchildren to know we were negligent with their future?

Linda Myers

South Bend, IN

Water is becoming a scarce resource. It is essential that it be kept untainted.

Rita Butler

Louisville, KY

I personally have not been in the area, but some of the wildlife that thrives there includes various species of birds. Birding and related avian activity is a big business in the US, and I can easily see many people enjoying bird-watching in the area. If the pollution is allowed, then these birds will leave or suffer.

Jen Dowdy

Paducah, KY

[See Section III.B in regard to Tourism Economics]

This should be a no-brainer for the EPA. Besides, salmon is omega brain food!

Rick Childress

Metairie, LA

I ask the authorities to please prevent more pollution being added to the Westfield river. Now is the time to prevent pollution, not add to it. Thank you for your consideration.

Paul Haggerty

East Kilbride, Lanarkshire

Our world is precious. Help keep it alive. Thank you

Sue Bell

Markby, Lincs

In any project there should be a balance between the needs of the natural environment and the

proposed project. Far too often the environment is sacrificed for the project. It is time to rebalance in favor of the Westfield River and find another way to handle the discharge water from this electric utility.

Carole Plourde
Amesbury, MA

Please do not allow a business' needs to once again supersede the needs of the natural world. It happens too often, and the species, both plant and animal, cannot keep absorbing our toxins. Thank you so much for considering my comments, and for recognizing the importance of our wild places.

Amy Manganelli
Brookline, MA

Having grown up in Western Massachusetts I am very concerned about the health and well being of all life that depends on healthy, clean and environmentally sound waterways. Wildlife is particularly sensitive to environmental changes and can't adapt to the release of warm and contaminated water. We will not stand for further deterioration of our environment and won't vote for anyone who will not stand with us!

Lani Blakeslee
Charlemont, MA

What are they thinking? I know, ignore the environment, we want profits. This sort of irresponsible thinking is not appropriate given the fragile state of our planet.

James M. Alex
Dennis, MA

Mankind can not afford to kill any more species.

Susan Woniak
Easthampton, MA

I want to see the EPA live up to its name and take action to protect the environment. When in doubt, err on the side of protecting the environment, in this case the Westfield River and all the wildlife in and around it.

Janice Higgins
Hadley, MA

All wildlife is precious. We need to do what we can to protect our waterways from harmful chemicals.

Doug Shohan
Lee, MA

The discharge from Russell Biomass is not and will not be good for the fish and wildlife that populate the river, not to mention the ill effects it will have on humans.

Amy Houbre
New Bedford, MA

We must save all rivers to keep biodiversity alive and healthy.

Eric Chipman
Newton, MA

This river is the pride of the region. There is no one outside of Russell, and the people at Hull Forestries that want this Biomass plant. More than half the town is against this plant. Given the amount of electricity that this plant would produce, it is certainly not worth this amount of environment dedgradation.

Robert Carey
Russell, MA

We have such a dark history of polluting our rivers. To allow Russel Biomass to discharge effluent into the Westfield River would set environmental progress back 50 years. We must not allow this to happen.

Dana Franchitto
S.Wellfleet, MA

The river's residents are depending on us.

Marcia Hutchinson
Sherborn, MA

I live in Southwick and worked in Agawam the year of the last large forest fire on Russell Mtn. The smoke was so bad in Southwick and Agawam that both towns thought there was a large fire in town. We will also be affected by Russell Biomass. The town of Russell was a nice quiet place where you could raise your children, but now children will not be safe, animals, fish, all wildlife, and human life will be ruined by the biomass. The loss of trees and river water will change the whole valley, including Westfield and all surrounding towns. I am very much against this Russel Biomass Facility. Keep it out of the town I grew up in.

Linda Consolini
Southwick, MA

Downtown Woronoco on the Westfield River used to be called Salmon Falls because it was said that all you had to do to catch salmon was put your basket in the waterfall. Please help us keep that legacy for the Westfield River. I would like to be able to take my children to play in the wild and scenic waterway in which I grew up splashing around.

Isabelle Stinnette
360 South Quarter Rd
Woronoco, MA 01071

When we start putting man's needs ahead of the well-being of our environment and other animals, we so disturb the balance of nature that we all suffer. We must consider the impact of all our actions to be sure that we do not cause future suffering as a result of convenience, haste, or greed.

Kristine Soly
Yarmouth Port, MA

We must always remember that we are the stewards of this planet and all its inhabitants.

Christopher Ebey

Baltimore, MD

Already, too much heat is being created for this earth and our environment. Directly adding even more heat along with other effluent to this river will be very destructive, but you can avoid that. Please do. Thank you.

Janet Foster
Parkville, MD

Please, let's save our beautiful Westfield River.
Carolyn Deibel
Potomac, MD

Any addition or subtraction from a river that is viable to a struggling species - in this case, the Atlantic salmon - is iffy at best. Why are alternatives not being studied? Why should changes like this one even be considered? Industrial plants ought not to be permitted to tamper with the natural order of things simply because it's more profitable for them. A glib, facile answer to this problem is not acceptable. Please make other plans.

Judith Mitchell
Waldoboro, ME

[See Section VII.B in regard to the Atlantic Salmon Restoration Program]

Thank you for your time.
Julie Skelton
Belleville, MI

Thank you for your time. Please take action!
Jessica Lake
Eastpointe, MI

This is irresponsible and ecologically devastating
Michelle Dingman
Monroe, MI

Please do not allow this permit to happen. Our ecosystems are already unbalanced due to man's input. Please allow the wildlife to remain there and stay alive. Thank you for your time and for hearing my position.
Theresa Kause
Warren, MI

Please do not allow this nightmare waiting to happen begin.
W. Daniel Case II
Willis, MI

Please stop industry from killing species such as the Atlantic salmon, which are native to the United States. It is important for our country that we preserve, not decimate our wildlife.
Susan Puscheck

Ypsilanti, MI

Its time to clean up after the last administration, lets get to work. Thanks.

Dean Borgeson
Brooklyn Park, MN

Discharging waste like this is so so so so wrong. It is insane!

Mary Smith
Little Falls, MN

We have to take care of our fragile environment!

Stephanie Sarich
Minnetonka, MN

The information above indicates that the permission of effluent discharge from Russell Biomass could throw off the entire ecosystem as it is meant to be, which will cause a chain reaction of detrimental effects to the ecology of the river and surrounding areas. Please help.

Debbie Geno
Grover, MO

Now is the time to put the planet first -- a good planet is hard to find, dammit!!!

Ernestina Short
Imperial, MO

Water helps sustain both humans and a countless variety of wildlife that depend on it. It should be the number one priority for our best protection.

Katie Lyons
Mountain View, MO

The arrogance of humanity breaks my heart. Please do not allow this ridiculous killing of our salmon, and every other life in this river. Life is precious, and we cannot live if our waters are ruined by this arrogance.

P. A. Williams
St Ignatius, MT

Wow !! There seems to be no end to the awful things that big business can think of to completely ruin the ecosystem! It would be so good if they just came up with the environmentally safest way to do their business. Please do not let them have their way in this endeavor. Please protect the whole system & we too will benefit. Thank you for your time,

Julianna Benefield
Cary, NC

Please do everything you can to protect wild and natural environments and ecosystems. Remember that our actions, even the seemingly insignificant ones, will seriously affect human life as well.

Jeanne LaStella
Charlotte, NC

It is imperative for our society to "grow up" in these matters and stop behaving like entitled and spoiled children. We have responsibilities beyond short term business concerns. Solutions will be difficult and expensive and we need to address solving the myriad ecological crises which ultimately affect our very existence.

Charles Shackelford
Charlotte, NC

The protection of the wildlife and environment of the Westfield River is important to all Americans, especially since we have already destroyed so much. We need to preserve this heritage not only for ourselves, but for future generations.

Harriette Frank
Durham, NC

I strongly encourage you to work with Russell Biomass to discontinue the water-cooling and find an alternative, like the previously mentioned air-cooled generators. Using air-cooled generators will not harm the integrity of the Westfield River and will preserve the wildlife, and recreation enjoyed by us all.

Tamara Bannister
Fayetteville, NC

[See Section VII in regard to Cooling Water Intake Structure]

No amount effluent discharge is acceptable!

James Pierce
Murphy, NC

The Westfield River deserves protection for future generations.

Carol McWhirter
Doniphan, NE

We must be the conservators of our world. What kind of future can our children and grandchildren look forward to if we continue to allow destructive companies to dump toxic waste in our waters.

Rebecca Dawson
Lincoln, NE

Protecting our waterways is of prime importance.

Judy Coleman
Omaha, NE

Let this be an opportunity to do the right thing - protect our waters, our fish, our wildlife, and our world! We can not afford to continue destroying our environment. Thank you, Judi Lindsey

Judith Lindsey
Candia, NH

It makes no sense to do anything that damages the river and its inhabitants. This includes the neighborhoods along the river. There is cleaner technology available that doesn't require drawing river water to assist Russell Biomass's cooling process.

Marilyn Britton
Peterborough, NH

Please consider the science in making your decision. Do not allow profits to be put ahead of the people of Massachusetts's wellbeing and that of the environment.

Charles Daly
Howell, NJ

Save the environment, it's the only one we have!!

Maria Inguaggiato
Pemberton, NJ

Please don't destroy any more clean water. Water should be blue and it is getting harder and harder to find decent looking water. We need to protect the animals and fish and all of the wildlife. We are their only hope.

Lascinda Gualario
Fair Lawn, NJ

Please restore this vital river to its former clean state and stop overusing the water for profit.

Caroline Wells
Albuquerque, NM

At a time when fish are declining all over the globe it only makes sense to protect a river with a population of salmon and other river life.

Kirsten Lear
Santa Fe, NM

Salmon are already endangered. We must not let industry continue to destroy what little nature we have left. All ecosystems, including human, depend on a healthy Earth, healthy rivers, and healthy wildlife.

Caer Reider
Santa Fe, NM

Once it's gone, it's gone.

Jayne Feshold
Henderson, NV

I live in the desert. The water table allocation amount was set based upon the water table in the flooded stage. That does not stop the cities and towns from taking their allotment despite it leaving us with very little water. That doesn't need to happen in Russell. You have an opportunity to see the area at its low time. Please take this opportunity to see the impact on the environment and the wildlife in that area. I have a voice and can speak out, but the wildlife and environment in the Westfield River area has no voice without those who care enough to speak out. If the electric company has a problem

with cooling their utility, they need to find another alternative to their problem and do it in a way that is not damaging to the ecosystem. They can make that change, nature can't.

Pat Brunson

Las Vegas, NV

Please do whatever the EPA can do to save the Westfield from pollution & other chemicals that will harm the ecology of the river. We can do something about it if we help together by asking EPA administrator Jackson to reduce the toxins that's harming the river & by saving the wildlife. Let's have a better future for the people of the Westfield. Thank you!

Derek Gendvil

Las Vegas, NV

We must stop interfering with the ecosystems and wildlife. Its up to you to do the right thing by thinking harder and acting smarter.

Janet Curtis

Reno, NV

With the consequences of human actions on the environment is now coming into clear focus, it is time for us to acknowledge that wildlife have an overarching moral claim to their habitat. We must not allow these animals to disappear because of heedlessness and apathy. Please consider the welfare of our wildlife as one of our greatest national treasures, which is your charge to protect. Thank you for your thoughtful consideration of this critical moral aspect of your environmental portfolio.

Heather Buchman

Clinton, NY

Please do not destroy the Westfield River and the wildlife it supports.

Linda Howe

Elmont, NY

Please find another solution. This river will surely become a place of death. We need to take the appropriate actions to keep our planet safe, and if that means that companies, businesses and the government have to spend more money doing what is right, then that's what must be done. When we protect the environment we protect ourselves.

Victoria Gaynoar

Forest Hills, NY

If we continue to disregard the natural balance of the river, we will do irreparable harm to the entire ecosystem as well as creating unnatural conditions that could have far reaching affects on climate and the future health of the planet.

Robin Dolbear

Hermon, NY

Please do not repeat the mistakes of the past, only awakening to the urgency of the situation after massive, almost permanent damage has been done!

Milton N. Bradley

Melville, NY

With reduced, if not decimated, fish stocks on both coasts, I find it hard to believe that a permit that will damage the diminished number of fish left is even being considered.

Anthony M Dambrosi
Middletown, NY

Please respect the environment! Mother Earth is the only home we have. Thank you.

Valerie Gilbert
NY, NY

This makes me so angry I cannot find courteous words to use. How unconscionable to even consider this action!

Sarah Kemp
NYC, NY

We as human beings need to be more responsible to our surroundings and the impact we have on it. We should never have a negative impact especially our waterways.

Linda Roach
Owego, NY

God bless the ones who speak for nature.

Martha P Nochimson
Riverdale, NY

This is a terrible plan and should be refused. We all know that endangering wildlife and ecosystems endangers us all.

C.E. Gac
Rochester, NY

This is more corporate selfishness. Big business often profits at the expense of the surrounding ecosystem - carelessly damaging the environment.

I Gac
Rochester, NY

This is an extremely important part of our children's and grandchildren's heritage.

Beverly Wing
Rochester, NY

The EPA's duty is to protect the environment. Allowing Russell Biomass to discharge polluted water into the Westfield River violates your very purpose and must not be considered. Please protect the salmon.

Ann McGarry Esq.
Rye Brook, NY

It seems to me unconscionable to allow something that would endanger the survival of a species as important as salmon, and otters and other wildlife.

Teresa Russo
Staten Island, NY

Please do not give Russell Biomass the permit to discharge water into the Westfield River!
Linda Gazzola
Tarrytown, NY

We can not let this awful thing happen. It has to be part of the large picture of saving our planet!
Patricia Missell
Webster, NY

It is important to protect the river for those that need it for survival. Please do not allow Russell Biomass to contaminate the Westfield River.
Angelina Coriano
Middletown, NY

Only when the last tree has died and the last river has been poisoned and the last fish has been caught will we realize we cannot eat money. - Cree Indian expression
Mark Burwinkel
Cincinnati, OH

We need to clean industrial waste from our rivers and our lives. You must, as we must, turn away from greed.
David Sheets
Cleveland, OH

I care about the Westfield River and river wildlife because I believe all humans have a responsibility to help protect the environment and the species who depend on it for survival.
Tina Wall
Greenville, OH

This should be a no-brainer but apparently it is not. There must be zero consequences from the operation of the utility and all its associated operations for the Westfield River and its banks and tributaries.
Andy Wallis Jr
Oxford, OH

This has got to stop. The river and the life of that area depends on it will be compromised due to this ill-advised plan to discharge the facility's water used to cool the electric plant. I strongly urge you to halt this plan before it proceeds and further.
Sandy Kucinski
Toledo, OH
[See Section VIII in regard to §316(b) Cooling Water Intake Structure]

Is the greed worth snuffing out life & a food resource for people. Strict monitoring is badly needed.
Mary A Blair

Waynesfield, OH

Please stop the madness. It is not like we don't know what will happen. Ignoring the environment for more profit is not the way.

Andrea Turek
West Salem, OH

We here in Oregon no longer take our salmon for granted. They are a foundation of the land and our health too. Clean places to boat are harder to find as well as fish.

Eliza i Capizzi
Philomath, OR

Should you allow the biomass incinerator to discharge heated effluents into the river that are toxic to the salmon? The obvious, correct answer is no - use one or more cooling towers instead! Dumping the heated waste makes the world pay dearly for Russell Biomass's carelessness. What will you do when life can no longer exists in the river down stream from the discharge port?

Abra Gwartney
Portland, OR

[See Section VIII in regard to §316(b) Cooling Water Intake Structure]

This is the time, more than ever, that stricter protections apply to industry that directly affects water and air. The permit in question is not sound decision making. Please be an advocate for the health of this river. Thank you.

Lisa Kaser
Portland, OR

Thermal pollution is as dangerous as sludge to an ecosystem.

Clifford Spencer,M.A.,M.S.
Portland, OR

We cannot continue to interfere with the environment. There are no "second chances". There must be no discharges into the Westfield River, or any other.

Nadine Zimmer
Portland, OR

We all have to be aware of these dangers to our enviroment and work to save it. We can no longer just "go along" with the powers that be. We must stop these poluters and do it now!

Ann Bartell
West Linn, OR

I serve on a local watershed council that works long and hard to restore aquatic and salmon habitat. It is sad to envision that all our work and that or countless others to improve environmental conditions could be negated with the stroke of a pen.

Paul Torrence
Williams, OR

Our government has finally begun to recognize the importance of cleaning up toxic waterways and preventing future pollution. Why would you regress and allow this destruction?

Marjorie Rathbone

Bryn Mawr, PA

There is not one good reason to permit polluting of a river,pond,lake, or any waterway - especially when it is home to so much wildlife. Russell Biomass is another example of a clueless,uncaring,greedy company.

Rene Pugh

Downington, PA

Please help!

Paul Smith

Downington, PA

Do the right thing.

Frank Sabatini

Exeter, PA

Also, biomass burning adds to CO2 polution.

Edmund Swiger

Pittsburgh, PA

[See Section IX.B in regard to CO2 Emissions]

The EPA must stand up for the rights of these people and the creatures that use this environment. Water pollution is never restricted to only one area. If you allow Russell Biomass to pollute the Westfield River, you will be harming every waterway down stream and the organisms that use these water ways. Thank you for listening.

June Brown

Pottsville, PA

We must protect our rivers, waterways, lakes, oceans at all costs!

Ann Seip

Trevose, PA

Take care of our rivers. Besides for the people enjoying them, they were created for the fish and wildlife.

Colleen Lobel

San Diego, CA

Do it now, before it's too late!

Chris McCabe

L Gransden

St Jude's Primrose Walk Sandy Beds

Please help us preserve this ecosystem that benefits both people and wildlife.

Ann Callahan

Aiken, SC

The EPA has a specific responsibility to the environment that should not be swayed by the wishes and money of big business. We have polluted enough rivers and streams, killed off enough species of animals and plants. It is time for the EPA, all other government agencies and the people of the United States to stand up and say no more. Thank you for your consideration of my comments.

Leslie Lowe

Inman, SC

Please keep the Westfield River as a safe environment for salmon, otter and all the area's wildlife. Do not allow a destructive hot discharge into it.

Greg Gillis

Clarksville, TN

Economic pressures do not justify damage to the environment. Please act to preserve the ecosystem of this river.

Joel Trupin

Nashville, TN

There will be wars over water if we do not stop destroying and sprawling! Poluted water resources affect all of us

T. Logan

Austin, TX

Many of America's fisheries are disappearing. We need to do something now to reverse this trend. Once a fishery vanishes, it is virtually impossible to recreate it - just look at the history of the Great Lakes. If this project damages or destroys the Atlantic salmon in the Westfield River, who will pay for those damages?

Craig Nazor

Austin, TX

It's time to stop being in the back pockets of lobbyists and start doing what you should be doing - protecting our country from harmful polution emitters.

Sharon Alexander

De Leon, TX

Protect our waters!

RJ Marshall

Gainesville, TX

Please remember that future generations in this area are dependent upon you for the quality of life they will have!

Phil Crabill

Highland Village, TX

Salmon are an important part of the food circle for many animals. Let's keep their habitat as intact as possible.

Jarrold Carroll
Houston, TX

I urge the EPA will do the right thing and protect our environment and wildlife, not harm them.

Annette Pieniazek
Houston, TX

Protection of wildlife is imperative.

Dave and Rita Coss
Marble Falls, TX

At a time when many fisheries are under stress, if not collapsed, it seems prudent to be protective of this one. We cannot afford to wipe out fish populations if we still expect to eat fish.

Sandra Woodal
San Antonio, TX

Every bit helps.

Sam You
San Antonio, TX

Why would you allow even more toxic build-up than already exists? There is no good reason.

Susan Rios
San Saba, TX

The human species is so pathetic and lame to foul its own nest and call that progress. Such proposed misuse of our natural resources is more macabre and malevolent than fiction. Please do not allow this proposed misuse to go forward.

John Zeigler
Tyler, TX

Clean water is rapidly disappearing all over our country. If we do not start helping to keep the rivers clean we will not have any water to drink for ourselves or the wildlife that depend on it.

Wanda Rurak
Whitney, TX

Please find alternative solutions for cooling the facility. The impact on the environment is too great to enable the current method. Our presence on this earth should make as little impact as is possible so that our precious wildlife will be here long after we are gone.

Mrs Clements
Perton, Wolverhampton, U.K.

[See Section VIII in regard to §316(b) Cooling Water Intake Structure]

Across the world, the casual attitude of so many people who should know better, has led to the many many species being under threat of extinction. A moment's consideration for God's creatures and the world we are charged with protecting will go a long way. To this end, filter beds are what is required, and then natural evaporation. Regards, AT Flynn

Anthony Flynn
Norfolk, UK

I sincerely hope you will not allow the Russell Biomass to have their way on this very important decision. President Obama says it's time for change - taking care of the rivers and the planet is change I can believe in.

Bj Wallace
Burke, VA

The wildlife of this river are already handicapped in their struggle to survive the pollution and falls. Adding the effluent discharge from Russell Biomass would only be another nail in their coffin. Please consider the good of the environment over the "bottom line".

Annette Overstreet
Forest, VA

Ultimately what we do to our environment will affect all of us. What kind of legacy are we leaving our children? A barren land without the song of birds, the call of the wild or the joyful dance of ocean creatures?

Simona Bergman
Manassas, VA

The days of pollution should be over. We know the effect pollution has on everything it touches. Rivers become tainted and aquatic life gets sick and/or dies. The air becomes foul and nauseating to all. Please protect the environment. Protect the circle of life.

Richard Churray
Port Haywood, VA

We must be better stewards of the Earth than this - let's not be shortsighted.

Joan DaVanzo
Vienna, VA

Our rivers are too precious a heritage for one to condone the abuse Russell Biomass proposes. It does not pass a second generation test, much less a seventh generation test. Please kill this project.

Phyllis White
Yorktown, VA

We must not permit human activity to destroy the life and habitat of every other species. We must be accountable for our behavior as stewards of this Earth.

Linda Costello
Essex Junction, VT

As guardians of earth, we must protect all living creatures and protecting the Westfield River is only one step on a very long road. Polluting the environment is bad business.

Sandy Valencour
Auburn, WA

We've already lost too much of our rivers and fish. Maybe it is time to go the other way for a while instead of ruining even more of our heritage. SDD

Mr. Shelley Dahlgren, PhD
Issaquah, WA

Because of the very real looming threat of global warming it is becoming more and more crucial that we humans always consider animals when we are making plans. There are copious reasons to do so, but the two most important are that 1) we are playing with the future our food supplies, and 2), we may be causing the extinction of fellow creatures, which is never a good thing.

Cynthia Wilson
Port Townsend, WA

[See Section IX.A in regard to Global Warming]

It is important that we do not continue the blatant disregard for the environment that our country suffered throughout the Cheney Administration.

Keith Fabing
Seattle, WA

It's insane to allow the Russell Biomass to discharge water used to cool the electric utility into the Westfield River. Are you aware of the extreme damage this will do to the river itself and the animals who depend on the river, especially the salmon? It sounds as though there hasn't been a complete environmental impact study done to warrant allowing this to happen. It's really sad that in this day and age of pollution and climate change that the EPA is willing to risk polluting a river that gives life to so many. Please listen to the people!

Gayle Janzen
Seattle, WA

Haven't we learned enough from scientific research to protect our fish and wildlife and the ecosystem they rely on. Please represent those treasures.

Kandace Loewen
Seattle, WA

Please keep this river clean and safe for the American people!

Constance Rodman
Seattle, WA

Not only will stealing water away from wildlife, both aquatic and animal, be an atrocity to their health, people need to understand the consequences of their actions and all those it affects! There is always a result in response to actions, and typically unwanted and unneeded as well as destructive, to a product concocted without first testing in advance. The water from scientists ought first be restricted

if not banned from them to comprehend the ramifications of their proposed assessments. The Westfield River is not their home, and if it were I doubt they will want to take in water used to cool the electric utility with every modified 'breath' as fish do. I am in severe disapproval.

A.E. White
Seattle, WA

If this company cannot perform their function without harming the river, it's fish and other life, they should not be trusted with the public's well-being. Do not grant them permits or any assistance in messing the world up. There's nothing good about compromised and dying rivers. Please!

Marguerite Winkel
Spokane, WA

We are the people, and we have the ability to change what we do to make it better for all the residents of the local environment. We can certainly devise a better system for cooling the discharge water before it impacts the Westfield River. We should not negatively impact other species, and ourselves, just because it is possible when the potential negative impacts are so great.

Emily Willoughby
Tukwila, WA

[See Section VIII in regard to §316(b) Cooling Water Intake Structure]

I have traveled along the Columbia River where dams have been built and the river beds are dry. This proposed use of the Westfield River is even more detrimental because of the salmon. I believe the day of wholesale do-what-you-want with our rivers and lakes had better stop before we have no clean water and no fish and no wildlife left and then, maybe no us. Thank you for not allowing this plant to be cooled by this river.

Ruth Skaar
Beaver Dam, WI

It's about time that companies internalize externalities. If an electric utility needs to use water to cool its operations, then that heated water must be let to cool again before being returned to the river or another, more technical, but environmentally neutral, such as solar cooling of a closed containment system, must be used for its cooling needs. We need to stop destroying our environment to satisfy our energy needs.

Margaret Welke
Madison, WI

[See Section VIII in regard to §316(b) Cooling Water Intake Structure]

I grew up in a small town in Southeastern Michigan. Our home faced out to the Huron River, which was without a doubt a beautiful area. When I was in my early teens it started to become apparent that there was something changing about the flow and the general condition of the river. An investigation showed that there were three plants along a forty mile length of it's path that were dumping 'non-contact coolant water' into the river. The public was told that the water being dumped was as clean if not cleaner than that was pumped in and was 'suitably' cooled before being released back into the river. The upshot of this was that not only had the water temperature increased, but the toxins found in the water were making everyone in the surrounding area very ill. There was also ground pollution, which was poisoning the food grown in the local gardens and the well water being used for

households. There has been a long fought war to clean everything back up, and over the last forty years progress has been made, but the area has got a long way to go. The Asuabu River is located in the northern part of the lower peninsula, and it is famous for the salmon fishing. There were problems up there too, but they found and dealt with those issues quickly. Today it is doing nicely again, and hopefully in another decade or so it will be back in all it's former glory. I have said all of this in hopes to make you understand how very, very fragile these ecosystems really are and that you can not protect them too much. Hopefully now you understand a little more why it so much easier to 'clean-up' the damage by prohibiting the dumping of the water in the first place. Thank you for taking the time to read this.

Thelma Thompson
Willis, MI

Can't you folks start getting it right for a change. Enough already!
Linea Anthony
Racine, WI

Please,do not harm the wildlife, they need our protection.
Myriam Baynard
Cheyenne, WY

Response XII.C

EPA acknowledges the above comments regarding the public process and recommendations for EPA actions. EPA has conducted the public review process in accordance with its applicable regulations and appreciates the thoughtful comments it has received. With consideration of the comments received, EPA believes that the resulting Final Permit is protective and in accordance with the applicable provisions of the CWA. See specific references to other applicable responses to comments in bold above.

Attachment A

Calculation of Adjusted 7Q10 Flow (Downstream of Withdrawal)

7Q10 (from Dflow, see AR #xx) = 20.8 cfs

Permitted Maximum Daily Withdrawal = 885,000 gpd = 1.37 cfs

20.8 cfs - 1.37 cfs = **19.4 cfs**

Calculation of Withdrawal Percentage

Percent of 7Q10 (upstream of Intake):

Withdrawal flow/7Q10 flow = $1.37/20.8 =$ **6.6%**

Percent of Mean Annual Flow:

Withdrawal/Mean Annual Flow = $1.37/634 =$ **0.2%**

Percent of Downstream 7Q10 at Westfield USGS Gage:

Withdrawal/Westfield 7Q10 = $1.37/37.8 =$ **3.6%**

Calculation of Total Residual Chlorine Water Quality Limits at Adjusted 7Q10

Dilution Factor = Discharge Volume + 7Q10/Discharge Volume = $(0.206 + 19.4)/0.206 =$ **94.4**

Monthly Average (Chronic) = $11 \text{ ug/l} * 94.4 =$ 1038.4 ug/l = **1.04 mg/l**

Max Daily (Acute) = $19 \text{ ug/l} * 94.4 =$ 1793.6 ug/l = **1.79 mg/l**

Technology-based Limits: Monthly Average = 0.2 mg/l Maximum Daily = 0.5 mg/l

Attachment B

Temperature - Estimated Rise in Temperature Based on updated 7Q10 Dflow Calculations

$$Q_{\text{plant}} = C_p m_p \Delta T_p$$

$$Q_{\text{river}} = C_p m_r \Delta T_r$$

$$C_p m_p \Delta T_p = C_p m_r \Delta T_r$$

$$\Delta T_r = m_p / m_r * \Delta T_p$$

$$m_p = m_r / \Delta T_p * \Delta T_r$$

Q_{plant} = heat load discharged from plant (btu)

C_p = heat capacity of water = 1°F x btu/lb

m_p = mass of effluent (lbs) (gal. or cubic foot per second if volume is used)

ΔT_p = change in temperature, effluent - influent (°F)

m_r = mass of river (lbs) (gal. or cubic foot per second if volume is used)

ΔT_r = change in river temperature (°F)

Case	m_r (cfs)	m_p (cfs)	T_r (°F)	T_p (°F)	ΔT_p (°F)	ΔT_r (°F)
1: 7Q10 flow; Max recorded river temp	19.4	0.206	82.2	85	2.8	0.03
2: 7Q10 flow; Cold water fishery (CWF) standard temp	19.4	0.206	68	85	17	0.18
3: 7Q10 flow; Winter river temp *	19.4	0.206	32	85	53	0.56
4: Lowest recorded flow; Max river temp	13.2	0.206	82.2	85	2.8	0.04
5: Lowest recorded flow; CWF standard temp	13.2	0.206	68	85	17	0.27
6: 7Q10 flow; Upper lethal A. salmon temp	19.4	0.206	81.5	85	3.5	0.04
7: Lowest flow; Upper lethal A. salmon temp	13.2	0.206	81.5	85	3.5	0.05
8: 7Q10 flow, ΔT_r equal to 3°F (CWF standard)	19.4	3.4	68	85	17	3.00

*Worst-Case Temperature Rise in River with Maximum Rise in Effluent Temperature of 53°F