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NPDES AND STATE PERMIT

issued to

Plainfield Renewable Energy, LLC
20 Marshall Street, Suite 300
Norwalk, CT 06854

Location Address:

Norwich Road via Mill Brook Road
Plainfield, CT

Facility ID: 109-110

Permit ID: CT0030473 and SP0002426

Receiving Stream: Quinebaug River

Permit Expires:

SECTION 1: GENERAL PROVISIONS

- (A) This permit is issued in accordance with section 22a-430 of Chapter 446k, Connecticut General Statutes ("CGS"), and Regulations of Connecticut State Agencies ("RCSA") adopted thereunder, as amended, and section 402(b) of the Clean Water Act, as amended, 33 USC 1251, et. seq., respectively, and pursuant to an approval dated September 26, 1973, by the Administrator of the United States Environmental Protection Agency for the State of Connecticut to administer an N.P.D.E.S. permit program.
- (B) Plainfield Renewable Energy, LLC, ("Permittee"), shall comply with all conditions of this permit including the following sections of the RCSA which have been adopted pursuant to section 22a-430 of the CGS and are hereby incorporated into this permit. Your attention is especially drawn to the notification requirements of subsection (i)(2), (i)(3), (j)(1), (j)(6), (j)(8), (j)(9)(C), (j)(10)(C), (j)(11)(C), (D), (E), and (F), (k)(3) and (4) and (l)(2) of section 22a-430-3.

Section 22a-430-3 General Conditions

- (a) Definitions
- (b) General
- (c) Inspection and Entry
- (d) Effect of a Permit
- (e) Duty
- (f) Proper Operation and Maintenance
- (g) Sludge Disposal
- (h) Duty to Mitigate
- (i) Facility Modifications; Notification
- (j) Monitoring, Records and Reporting Requirements
- (k) Bypass
- (l) Conditions Applicable to POTWs
- (m) Effluent Limitation Violations (Upsets)
- (n) Enforcement
- (o) Resource Conservation
- (p) Spill Prevention and Control
- (q) Instrumentation, Alarms, Flow Recorders
- (r) Equalization

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Section 22a-430-4 Procedures and Criteria

- (a) Duty to Apply
 - (b) Duty to Reapply
 - (c) Application Requirements
 - (d) Preliminary Review
 - (e) Tentative Determination
 - (f) Draft Permits, Fact Sheets
 - (g) Public Notice, Notice of Hearing
 - (h) Public Comments
 - (i) Final Determination
 - (j) Public Hearings
 - (k) Submission of Plans and Specifications. Approval.
 - (l) Establishing Effluent Limitations and Conditions
 - (m) Case by Case Determinations
 - (n) Permit issuance or renewal
 - (o) Permit Transfer
 - (p) Permit revocation, denial or modification
 - (q) Variances
 - (r) Secondary Treatment Requirements
 - (s) Treatment Requirements for Metals and Cyanide
 - (t) Discharges to POTWs - Prohibitions
- (C) Violations of any of the terms, conditions, or limitations contained in this permit may subject the Permittee to enforcement action including, but not limited to, seeking penalties, injunctions and/or forfeitures pursuant to applicable sections of the CGS and RCSA.
- (D) Any false statement in any information submitted pursuant to this permit may be punishable as a criminal offense under section 22a-438 or 22a-131a of the CGS or in accordance with section 22a-6, under section 53a-157b of the CGS.
- (E) The authorization to discharge under this permit may not be transferred without prior written approval of the Commissioner of Environmental Protection ("Commissioner"). To request such approval, the Permittee and proposed transferee shall register such proposed transfer with the Commissioner, at least 30 days prior to the transferee becoming legally responsible for creating or maintaining any discharge which is the subject of the permit transfer. Failure, by the transferee, to obtain the Commissioner's approval prior to commencing such discharge(s) may subject the transferee to enforcement action for discharging without a permit pursuant to applicable sections of the CGS and RCSA.
- (F) No provision of this permit and no action or inaction by the Commissioner shall be construed to constitute an assurance by the Commissioner that the actions taken by the Permittee pursuant to this permit will result in compliance or prevent or abate pollution.
- (G) Nothing in this permit shall relieve the Permittee of other obligations under applicable federal, state and local law.
- (H) An annual fee shall be paid for each year this permit is in effect as set forth in section 22a-430-7 of the Regulations of Connecticut State Agencies.

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SECTION 2: DEFINITIONS

(A) The definitions of the terms used in this permit shall be the same as the definitions contained in section 22a-423 of the CGS and section 22a-430-3(a) and 22a-430-6 of the RCSA, except for "No Observable Acute Effect Level (NOAEL)" which is redefined below.

(B) In addition to the above, the following definitions shall apply to this permit:

"-----" in the limits column on the monitoring table means a limit is not specified but a value must be reported on the DMR

"Annual" in the context of any sampling frequency found in Section 5, shall mean the sample must be collected in the month of July. If there is no discharge during the month of July, the Permittee shall report no discharge in the Discharge Monitoring Report (DMR). However, the Permittee shall sample during the next month when a discharge exists.

"Average Monthly Limit" means the maximum allowable "Average Monthly Concentration" as defined in section 22a-430-3(a) of the RCSA when expressed as a concentration (e.g. mg/l); otherwise, it means "Average Monthly Discharge Limitation" as defined in section 22a-430-3(a) of the RCSA.

"Critical Test Concentration (CTC)" means the specified effluent dilution at which the Permittee is to conduct a single-concentration Aquatic Toxicity test.

"Closed-cycle Recirculation System" means a system designed, using minimized makeup and blow-down flows, to withdraw water from a natural or other water source to support contact and/or non-contact cooling uses within the facility. The water is usually sent to a cooling canal or channel, lake, pond or tower to allow waste heat to be dissipated to the atmosphere and then is returned to the system. New source water (make-up water) is added to the system to replenish losses that have occurred due to blow-down, drift and evaporation.

"Cooling water intake structure" means the total physical structure and any associated constructed waterways used to withdraw cooling water from waters of the state. The cooling water intake structure extends from the point at which water is withdrawn from the surface water source up to, and including, the intake pumps.

"Daily Concentration" means the concentration of a substance as measured in a daily composite sample, or, the arithmetic average of all grab sample results defining a grab sample average.

"Daily Quantity" means the quantity of waste discharged during an operating day.

"°F" means degrees Fahrenheit.

"Instantaneous Limit" means the highest allowable concentration of a substance as measured by a grab sample, or the highest allowable measurement of a parameter as obtained through instantaneous monitoring.

"In stream Waste Concentration (IWC)" means the concentration of a discharge in the receiving water after mixing has occurred in the allocated zone of influence.

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"Maximum Daily Limit" means the maximum allowable "Daily Concentration" (defined above) when expressed as a concentration (e.g. mg/l); otherwise, it means the maximum allowable "Daily Quantity" as defined above, unless it is expressed as a flow quantity. If expressed as a flow quantity it means "Maximum Daily Flow" as defined in section 22a-430-3(a) of the RCSA.

"NA" as a Monitoring Table abbreviation means "not applicable".

"NR" as a Monitoring Table abbreviation means "not required".

"No Observable Acute Effect Level (NOAEL)" means any concentration equal to or less than the critical test concentration in a single concentration (pass/fail) toxicity test conducted pursuant to section 22a-430-3(j)(7)(A)(i) RCSA demonstrating greater than 50% survival of test organisms in 100% (undiluted) effluent and 90% or greater survival of test organisms at the CTC.

"Quarterly", in the context of a sampling frequency, means sampling is required in the months of January, April, July, and October.

"Range During Month" ("RDM"), as a sample type, means the lowest and the highest values of all of the monitoring data for the reporting month.

"Range During Sampling" ("RDS"), as a sample type, means the maximum and minimum of all values recorded as a result of analyzing each grab sample of; 1) a Composite Sample, or, 2) a Grab Sample Average. For those Permittees with continuous monitoring and recording pH meters, Range During Sampling means the maximum and minimum readings recorded with the continuous monitoring device during the Composite or Grab Sample Average sample collection.

"Twice per Month" when used as a sample frequency, shall mean two samples per calendar month collected no less than 12 days apart.

"ug/l" means micrograms per liter.

SECTION 3: COMMISSIONER'S DECISION

- (A) The Commissioner has issued a final determination and found that such discharge will not cause pollution of any of the waters of the state and the proposed system to treat such discharge will protect the waters of the state from pollution. The Commissioner's decision is based on Application No. 200702055 for permit issuance received on August 9, 2007 and the administrative record established in the processing of that application.
- (B) The Commissioner hereby authorizes the Permittee to discharge in accordance with the provisions of this permit, the above referenced application, and all approvals issued by the Commissioner or the Commissioner's authorized agent for the discharges and/or activities authorized by, or associated with, this permit.
- (C) The Commissioner reserves the right to make appropriate revisions to the permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the Federal Clean Water Act or the CGS or regulations adopted thereunder, as amended. The permit as modified or renewed under this paragraph may also contain any other requirements of the Federal Clean Water Act or CGS or regulations adopted thereunder which are then applicable.

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- (D) The Commissioner has determined that the location, design, construction and capacity of the cooling water intake structure reflects the Best Technology Available (BTA) for minimizing adverse environmental impact pursuant to Section 316(b) of the Federal Water Pollution Control Act (FWPCA). The Commissioner has also determined that the effluent limitations established herein are consistent with the provisions of Section 316(a) of the FWPCA.

SECTION 4: GENERAL EFFLUENT LIMITATIONS

- (A) No discharge shall contain, or cause in the receiving stream, a visible oil sheen or floating solids; or, cause visible discoloration or foaming in the receiving stream.
- (B) No discharge shall cause acute or chronic toxicity in the receiving water body beyond any zone of influence specifically allocated to that discharge in this permit.
- (C) The temperature of any discharge shall not increase the temperature of the receiving stream above 85°F, or, in any case, raise the normal temperature of the receiving stream more than 4°F.

SECTION 5: SPECIFIC EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

- (A) The discharges shall not exceed and shall otherwise conform to the specific terms and conditions listed below. The discharges are restricted by, and shall be monitored in accordance with, the tables below:

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Table A

Discharge Serial Number: 101						Monitoring Location: 1			
Wastewater Description: Treated cooling tower blowdown wastewater									
Monitoring Location Description: After the temperature monitoring probe prior to discharging into the Quinebaug River via the diffuser									
PARAMETER	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			Minimum Level Test ³
		Average Monthly Limit	Maximum Daily Limit	Sample/Reporting Frequency ²	Sample Type or Measurement to be reported	Instantaneous limit or required range	Sample/Reporting Frequency	Sample Type or measurement to be reported	
Aluminum, Total	mg/l	1.42	2.86	Weekly/Monthly	Daily Composite	4.29	NR	NA	
Ammonia	mg/l	-----	-----	Weekly/Monthly	Daily Composite	-----	NR	NA	
Boron	mg/l	-----	-----	Weekly/Monthly	Daily Composite	-----	NR	NA	
Chlorine, Total Residual	mg/l	0.18	0.36	Weekly/Monthly	Grab Sample Average	0.54	NR	NA	*
Copper, Total	mg/l	0.096	0.19	Weekly/Monthly	Daily Composite	0.28	NR	NA	*
Flow, Average and Maximum ¹	gpd	126,103	173,571	Daily/Monthly	Daily Flow	NA	NR	NA	
Flow, Total	gpd	-----	173,571	Daily/Monthly	Daily Flow	NA	NR	NA	
Iron	mg/l	-----	-----	Weekly/Monthly	Daily Composite	-----	NR	NA	
Lead, Total	mg/l	0.019	0.039	Weekly/Monthly	Daily Composite	0.058	NR	NA	*
Phosphorus	mg/l	----	-----	Weekly/Monthly	Daily Composite	NA	NR	NA	
pH	S.U.	NA	NA	NR	NA	6.0 - 9.0	Weekly/Monthly	RDS	
pH, Continuous	S.U.	NA	NA	NR	NA	6.0 - 9.0	Continuous/Monthly	RDM	
Temperature, Maximum (See remark 1)	°F	NA	NA	NR	NA	84.0	Hourly	Instantaneous	
Temperature, intake/outlet differential	°F	NA	NA	NR	NA	-----	Hourly	Instantaneous	
Turbidity	NTU	NA	NA	NR	NA	-----	Hourly	Grab	
Total Suspended Solids	mg/l	20.0	30.0	Weekly/Monthly	Daily Composite	45.0	NR	NA	
Zinc, Total	mg/l	0.64	1.3	Weekly/Monthly	Daily Composite	1.95	NR	NA	*

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Table Footnotes and Remarks:

Footnotes:

¹ For this parameter the Permittee shall maintain at the facility a record of the total flow for each day of discharge and shall report the Average Daily Flow and the Maximum Daily Flow for each sampling month.

² The first entry in this column is the 'Sample Frequency'. If a 'Reporting Frequency' does not follow this entry and the 'Sample Frequency' is more frequent than monthly then the 'Reporting Frequency' is monthly. If the 'Sample frequency' is specified as monthly, or less frequent, then the 'Reporting Frequency' is the same as the 'Sample Frequency'.

³ Minimum Level Test refers to Section 6 Paragraph A of this permit.

Remarks:

¹ The Permittee shall report the maximum and minimum temperature of the discharge for each month.

TABLE B						
Discharge Serial Number (DSN): 101			Monitoring Location: T			
Wastewater Description: Treated cooling tower blowdown wastewater						
Monitoring Location Description: After the temperature monitoring probe prior to discharging into the Quinebaug River via the diffuser						
Allocated Zone of Influence (ZOI): 137,750 gph				In stream Waste Concentration (IWC): 5%		
PARAMETER	Units	Maximum Daily Limit	Maximum Instantaneous Limit	Sampling Frequency	Sample Type	Minimum Level Analysis See Section 6
Aquatic Toxicity, Daphnia, Pulex ¹ NOAEL = 100%		>90%	NA	Quarterly	Daily Composite	
Aquatic Toxicity, Pimephales promelas ¹ NOAEL= 100%		>90%	NA	Quarterly	Daily Composite	
Aquatic Toxicity, Daphnia, Pulex ¹ NOAEL = 100%			>90%	NR	Grab	
Aquatic Toxicity, Pimephales promelas ¹ NOAEL= 100%			>90%	NR	Grab	

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TABLE B						
Discharge Serial Number (DSN): 101			Monitoring Location: T			
Wastewater Description: Treated cooling tower blowdown wastewater						
Monitoring Location Description: After the temperature monitoring probe prior to discharging into the Quinebaug River via the diffuser						
Allocated Zone of Influence (ZOI): 137,750 gph				In stream Waste Concentration (IWC): 5%		
PARAMETER	Units	Maximum Daily Limit	Maximum Instantaneous Limit	Sampling Frequency	Sample Type	Minimum Level Analysis See Section 6
Chronic Toxicity (See Section 6(C) below)	%	NA	NA	Annual	Daily Composite	
Aluminum	mg/l	-----	NA	Quarterly	Daily Composite	
Boron	mg/l	-----	NA	Quarterly	Daily Composite	
Chlorine, Total Residual	mg/l	0.36	NA	Quarterly	Daily Composite	*
Copper, Total	mg/l	0.19	NA	Quarterly	Daily Composite	*
Lead, Total	mg/l	0.039	NA	Quarterly	Daily Composite	*
Iron, total	mg/l	-----	NA	Quarterly	Daily Composite	
Nitrogen, Ammonia (total as N)	mg/l	-----	NA	Quarterly	Daily Composite	
Nitrogen, Nitrate (total as N)	mg/l	-----	NA	Quarterly	Daily Composite	
Nitrogen, Nitrite (total as N)	mg/l	-----	NA	Quarterly	Daily Composite	
Phosphorus, Total	mg/l	-----	NA	Quarterly	Daily Composite	
Total Suspended Solids	mg/l	30.0	NA	Quarterly	Daily Composite	

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TABLE B						
Discharge Serial Number (DSN): 101			Monitoring Location: T			
Wastewater Description: Treated cooling tower blowdown wastewater						
Monitoring Location Description: After the temperature monitoring probe prior to discharging into the Quinebaug River via the diffuser						
Allocated Zone of Influence (ZOI): 137,750 gph				In stream Waste Concentration (IWC): 5%		
PARAMETER	Units	Maximum Daily Limit	Maximum Instantaneous Limit	Sampling Frequency	Sample Type	Minimum Level Analysis See Section 6
Zinc, Total	mg/l	1.3	NA	Quarterly	Daily Composite	*
<p>Remark: All analysis shall be on the same sample.</p> <p>Footnote: ¹ The results of the Toxicity Tests shall be recorded in % on the DMR.</p>						

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Table C

Monitoring Location: 101-H Intake Cooling Water		Monitoring Location: G							
Monitoring Location Description: At the pH/temperature/turbidity monitoring location prior to the intake cooling water treatment									
PARAMETER	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			Minimum Level Test ³
		Average Monthly Limit	Maximum Daily Limit	Sample/Reporting Frequency	Sample Type or Measurement to be reported	Instantaneous limit or required range	Sample/Reporting Frequency	Sample Type or measurement to be reported	
Aluminum, Total	mg/l	NA	NA	NR	NA	-----	Monthly	Grab	
Copper, Total	mg/l	NA	NA	NR	NA	-----	Monthly	Grab	*
Flow, Average and Maximum ¹	gpd	-----	893,000	Monthly	Daily Flow	NA	NR	NA	
Flow, Instantaneous	gpm	NA	NA	NR	NA	-----	Daily/ Monthly	Instantaneous	
Iron, Total	mg/l	NA	NA	NR	NA	-----	Monthly	Grab	
Lead, Total	mg/l	NA	NA	NR	NA	-----	Monthly	Grab	*
Nitrogen, Ammonia (total as N)	mg/l	NA	NA	NR	NA	-----	Monthly	Grab	
Nitrogen, Nitrate, (total as N)	mg/l	NA	NA	NR	NA	-----	Monthly	Grab	
Nitrogen, Nitrite, (total as N)	mg/l	NA	NA	NR	NA	-----	Monthly	Grab	
Phosphorus	mg/l	NA	NA	NR	NA	-----	Monthly	Grab	
Temperature (See remark 1 below)	°F	NA	NA	NR	NA	-----	Monthly	Instantaneous	
Turbidity	NTU	NA	NA	NR	NA	-----	Monthly	Grab	
Total Suspended Solids	mg/l	NA	NA	NR	NA	-----	Monthly	Grab	
Zinc, Total	mg/l	NA	NA	NR	NA	-----	Monthly	Grab	*

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Table Footnotes and Remarks:

Footnotes:

¹ For this parameter the permittee shall maintain at the facility a record of the total intake flow for each day of water withdrawal and shall report the Average Daily Flow and Maximum Daily Flow for each month.

² The first entry in this column is the 'Sample Frequency'. If this entry is not followed by a 'Reporting Frequency' and the 'Sample Frequency' is more frequent than monthly then the 'Reporting Frequency' is monthly. If the 'Sample frequency' is specified as monthly, or less frequent, then the 'Reporting Frequency' is the same as the 'Sample Frequency'

³ Minimum Level Test refers to Section 6 Paragraph A of this permit.

Remarks:

1. The Permittee shall report the maximum and minimum temperature of the intake water for each month.

Table D

Discharge Serial Number: 102

Monitoring Location: 1

Wastewater Description: Fire pump test wastewater

Maximum Frequency of Discharge: Once per year

Monitoring Location Description: Prior to discharging into the in-ground stormwater infiltration system located at South end of the site

PARAMETER	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			Minimum Level Test ³
		Average Monthly Limit	Maximum Daily Limit	Sample/Reporting Frequency ²	Sample Type or Measurement to be reported	Instantaneous limit or required range	Sample/Reporting Frequency	Sample Type or measurement to be reported	
Aluminum, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab	
Boron, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab	
Copper, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab	*
Flow, Maximum ¹	gpd	NA	225,000	Annual	Daily Flow	NA	NR	NA	
Iron, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab	
Lead, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab	*
pH	S.U.	NA	NA	NR	NA	6.0 - 9.0	Annual	Grab	
Phosphorus	mg/l	NA	NA	NR	NA	----	Annual	Grab	
Zinc, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab	*

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Table Footnotes and Remarks:

Footnotes:

¹ For this parameter the permittee shall maintain at the facility a record of the total flow for each day of discharge and shall report the Maximum Daily Flow for each sampling month.

² The first entry in this column is the 'Sample Frequency'. If this entry is not followed by a 'Reporting Frequency' and the 'Sample Frequency' is more frequent than monthly then the 'Reporting Frequency' is monthly. If the 'Sample frequency' is specified as monthly, or less frequent, then the 'Reporting Frequency' is the same as the 'Sample Frequency'

³ Minimum Level Test refers to Section 6 Paragraph A of this permit.

Table E									
Discharge Serial Number: 103						Monitoring Location: 1			
Wastewater Description: Fire hydrant test wastewater									
Maximum Frequency of Discharge: Once per year									
Monitoring Location Description: Prior to discharging into the in-ground stormwater infiltration system located at South and North end of the site (See remark 1 below)									
PARAMETER	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			Minimum Level Test ³
		Average Monthly Limit	Maximum Daily Limit	Sample/Reporting Frequency ²	Sample Type or Measurement to be reported	Instantaneous limit or required range	Sample/Reporting Frequency	Sample Type or measurement to be reported	
Copper, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab*	*
Flow, Maximum ¹	gpd	NA	1,000	Annual	Daily Flow	NA	NR	NA	
Iron, Total	mg/l	NA	NA	NR	NA	-----	Annual	Grab*	
Lead, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab*	*
pH	S.U.	NA	NA	NR	NA	6.0 - 9.0	Annual	Grab*	
Zinc, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab*	*

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Table Footnotes and Remarks:

Footnotes:

¹ For this parameter the permittee shall maintain at the facility a record of the total flow for each day of discharge and shall report the Maximum Daily Flow for each sampling month.

² The first entry in this column is the 'Sample Frequency'. If this entry is not followed by a 'Reporting Frequency' and the 'Sample Frequency' is more frequent than monthly then the 'Reporting Frequency' is monthly. If the 'Sample frequency' is specified as monthly, or less frequent, then the 'Reporting Frequency' is the same as the 'Sample Frequency'

³ Minimum Level Test refers to Section 6 Paragraph A of this permit.

Remarks:

*1. Sampling for permit compliance shall be collected from either one of the two fire hydrants.

Table F

Discharge Serial Number: 104

Monitoring Location: 1

Wastewater Description: Make-up supply tank drain and overflow wastewaters

Maximum Frequency of Discharge: Once per year

Monitoring Location Description: Prior to discharging into the in-ground stormwater infiltration system located at North end of the site

PARAMETER	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			Minimum Level Test ³
		Average Monthly Limit	Maximum Daily Limit	Sample/Reporting Frequency ²	Sample Type or Measurement to be reported	Instantaneous limit or required range	Sample/Reporting Frequency	Sample Type or measurement to be reported	
Aluminum, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab	
Boron, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab	
Copper, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab	*
Flow, Maximum ¹	gpd	NA	250,000	Annual	Daily Flow	NA	NR	NA	
Iron, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab	
Lead, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab	*
pH	S.U.	NA	NA	NR	NA	6.0 - 9.0	Annual	Grab	
Phosphorus	mg/l	NA	NA	NR	NA	-----	Annual	Grab	
Zinc, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab	*

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<p>Table Footnotes and Remarks:</p> <p>Footnotes:</p> <p>¹ For this parameter the permittee shall maintain at the facility a record of the total flow for each day of discharge and shall report the Maximum Daily Flow for each sampling month.</p> <p>² The first entry in this column is the 'Sample Frequency'. If this entry is not followed by a 'Reporting Frequency' and the 'Sample Frequency' is more frequent than monthly then the 'Reporting Frequency' is monthly. If the 'Sample frequency' is specified as monthly, or less frequent, then the 'Reporting Frequency' is the same as the 'Sample Frequency'</p> <p>³ Minimum Level Test refers to Section 6 Paragraph A of this permit.</p>

Table G									
Discharge Serial Number: 105						Monitoring Location: 1			
Wastewater Description: Demineralized water tank overflow wastewater									
Maximum Frequency of Discharge: Once per year									
Monitoring Location Description: Prior to discharging into the in-ground stormwater infiltration system located at North end of the site									
PARAMETER	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			Minimum Level Test ³
		Average Monthly Limit	Maximum Daily Limit	Sample/Reporting Frequency ²	Sample Type or Measurement to be reported	Instantaneous limit or required range	Sample/Reporting Frequency	Sample Type or measurement to be reported	
Copper, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab	*
Flow, Maximum ¹	gpd	NA	10,000	Annual	Daily Flow	NA	NR	NA	
Iron, Total	mg/l	NA	NA	NR	NA	-----	Annual	Grab	
Lead, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab	*
pH	S.U.	NA	NA	NR	NA	6.0 - 9.0	Annual	Grab	
Zinc, Total	mg/l	NA	NA	NR	NA	----	Annual	Grab	*

<p>Table Footnotes and Remarks:</p> <p>Footnotes:</p> <p>¹ For this parameter the permittee shall maintain at the facility a record of the total flow for each day of discharge and shall report the Maximum Daily Flow for each sampling month.</p> <p>² The first entry in this column is the 'Sample Frequency'. If this entry is not followed by a 'Reporting Frequency' and the 'Sample Frequency' is more frequent than monthly then the 'Reporting Frequency' is monthly. If the 'Sample frequency' is specified as monthly, or less frequent, then the 'Reporting Frequency' is the same as the 'Sample Frequency'</p> <p>³ Minimum Level Test refers to Section 6 Paragraph A of this permit.</p>

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- (1) All samples shall be comprised of only the wastewater described in this table. Samples shall be collected prior to combination with receiving waters or wastewater of any other type, and after all approved treatment units, if applicable. All samples collected shall be representative of the discharge during standard operating conditions.
- (2) In cases where limits and sample type are specified but sampling is not required by this permit, the limits specified shall apply to all samples which may be collected and analyzed by the Department of Environmental Protection personnel, the Permittee, or other parties.
- (3) The limits imposed on the discharges listed in this permit take effect on the issuance date of this permit, hence any sample taken after this date which, upon analysis, shows an exceedance of permit limits will be considered non-compliance.

The monitoring requirements begin on the date of issuance of this permit if the issuance date is on or before the 12th day of a month. For permits issued on or after the 13th day of a month, monitoring requirements begin the 1st day of the following month.

- (4) The Permittee is prohibited from discharging polychlorinated biphenyl compounds.
- (5) The Permittee is prohibited from using any chemicals that contain phosphorus in any process or activity that may result in a discharge to the waters of the state.
- (6) The Permittee shall construct, operate and maintain the cooling water intake structure in accordance with the mitigation and monitoring plan entitled, "Plainfield Renewable Energy, LLC, Proposed 37.5MW Biomass Facility, Mitigation and Monitoring Plan", dated January 2008 and revised through April 1, 2008, prepared by Kleinschmidt.
- (7) The Permittee shall construct, operate and maintain the outdoor wood storage area in accordance with the report dated February 19, 2008 and filed with the DEP on February 20, 2008.

SECTION 6: SAMPLE COLLECTION, HANDLING AND ANALYTICAL TECHNIQUES

(A) Chemical Analysis

- (1) Chemical analyses to determine compliance with effluent limits and conditions established in this permit shall be performed using the methods approved pursuant to the 40 CFR 136 unless an alternative method has been approved in writing pursuant to 40 CFR 136.4 or as provided in section 22a-430-3(j)(7) of the RCSA. Chemicals which do not have methods of analysis defined in 40 CFR 136 shall be analyzed in accordance with methods specified in this permit.
- (2) All metals analyses identified in this permit shall refer to analyses for Total Recoverable Metal as defined in 40 CFR 136 unless otherwise specified.

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- (3) The Minimum Levels specified below represent the concentrations at which quantification must be achieved and verified during the chemical analyses for the parameters identified in Section 5 Tables A, B, C, D, E, F and G. Analyses for these parameters must include check standards within ten percent of the specified Minimum Level or calibration points equal to or less than the specified Minimum Level.

<u>Parameter</u>	<u>Minimum Level</u>
Chlorine, total residual	20.0 ug/L
Copper	5.0 ug/L
Lead	5.0 ug/L
Zinc	10.0 ug/L

- (4) The value of each parameter for which monitoring is required under this permit shall be reported to the maximum level of accuracy and precision possible consistent with the requirements of this section of the permit.
- (5) Effluent analyses for which quantification was verified during the analysis at or below the minimum levels specified in this section and which indicate that a parameter was not detected shall be reported as "less than x" where 'x' is the numerical value equivalent to the analytical method detection limit for that analysis.
- (6) Results of effluent analyses which indicate that a parameter was not present at a concentration greater than or equal to the Minimum Level specified for that analysis shall be considered equivalent to zero (0.0) for purposes of determining compliance with effluent limitations or conditions specified in this permit.

(B) Acute Aquatic Toxicity Test

- (1) Samples for monitoring of Aquatic Toxicity shall be collected and handled as prescribed in "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (EPA/821-R-02-012).
- (a) Composite samples shall be chilled as they are collected. Grab samples shall be chilled immediately following collection. Samples shall be held at 4 degrees Centigrade until Aquatic Toxicity testing is initiated.
- (b) Effluent samples shall not be dechlorinated, filtered, or, modified in any way, prior to testing for Aquatic Toxicity unless specifically approved in writing by the Commissioner for monitoring at this facility.
- (c) Chemical analyses of the parameters identified in Section 5 Table B shall be conducted on an aliquot of the same sample tested for Aquatic Toxicity.
- (i) At a minimum, pH, specific conductance, total alkalinity, total hardness, and total residual chlorine shall be measured in the effluent sample and, during Aquatic Toxicity tests, in the highest concentration of test solution and in the dilution (control) water at the beginning of the test and at test termination. If Total Residual Chlorine is not detected at test initiation, it does not need to be measured at test termination. Dissolved oxygen, pH, and temperature shall be measured in the

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control and all test concentrations at the beginning of the test, daily thereafter, and at test termination.

- (d) Tests for Aquatic Toxicity shall be initiated within 36 hours of sample collection.
- (2) Monitoring for Aquatic Toxicity to determine compliance with the permit limit and condition on Aquatic Toxicity (invertebrate) above shall be conducted for 48-hours utilizing neonatal Daphnia pulex (less than 24-hours old).
- (3) Monitoring for Aquatic Toxicity to determine compliance with the permit limit on Aquatic Toxicity (vertebrate) above shall be conducted for 48-hours utilizing larval Pimephales promelas (1-14 days old with no more than 24-hours range in age).
- (4) Tests for Aquatic Toxicity shall be conducted as prescribed for static non-renewal acute tests in "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (EPA/821-R-02-012), except as specified below.
 - (a) For Aquatic Toxicity Limits and for monitoring only conditions, expressed as an NOAEL value, Pass/Fail (single-concentration) tests shall be conducted at a specified Critical Test Concentration (CTC) equal to the Aquatic Toxicity Limit, or 100% in the case of monitoring only conditions, as prescribed in section 22a-430-3(j)(7)(A)(i) of the Regulations of Connecticut State Agencies, except that five replicates of undiluted effluent and five replicates of effluent diluted to the CTC shall be included.
 - (b) Organisms shall not be fed during the tests.
 - (c) Copper nitrate shall be used as the reference toxicant in tests with freshwater organisms.
 - (d) Synthetic freshwater prepared with deionized water adjusted to a hardness of 50 mg/L (plus or minus 5 mg/L) as CaCO₃ shall be used as dilution water in tests with freshwater organisms.
- (5) Compliance with limits on Aquatic Toxicity shall be determined as follows:
 - (a) For limits expressed as an NOAEL value, compliance shall be demonstrated when the results of a valid pass/fail Aquatic Toxicity test indicates there is greater than 50% survival in the undiluted effluent and 90% or greater survival in the effluent at the specified CTC.
- (C) The Permittee shall annually monitor the chronic toxicity of the DSN 101 in accordance with the following specifications.
 - (1) Chronic toxicity testing of the discharge shall be conducted annually during July, August, or September of each year.
 - (2) Chronic toxicity testing shall be performed on the discharge in accordance with the test methodology established in "Short term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms" (EPA-821-R-02-012) as referenced in 40 CFR 136 for Cerio daphnia survival and reproduction and Fathead Minnow larval survival and growth.
 - (3) Chronic toxicity tests shall utilize a minimum of five effluent dilutions prepared using a dilution factor

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of 0.5 (100% effluent, 50% effluent, 25 % effluent, 12.5 % effluent, 6.25 % effluent, 0 % effluent).

- (4) Quinebaug River water collected immediately upstream of the area influenced by the discharge shall be used as site water control (0% effluent) and dilution water in the toxicity tests.
- (5) A laboratory water control consisting of synthetic freshwater prepared in accordance with EPA-821-R-02-012 at a hardness of 50±5 mg/l shall be included in the test protocol in addition to the site-water control.
- (6) Daily composite samples of the discharge and grab samples of the Quinebaug River for use as site water control and dilution water shall be collected on: day 0, for test solution renewal on day 1 and day 2 of the test; day 2, for test solution renewal on day 3 and day 4 of the test; and day 4, for test solution renewal on day 5, 6, and 7 of the test. Samples shall not be dechlorinated, pH or hardness adjusted, or chemically altered in any way.
- (7) All samples of the discharge and the Quinebaug River water used in the chronic toxicity test shall, at a minimum, be analyzed and results reported in accordance with the provisions listed in Section 6(A) of this permit for the following parameters:

pH	Copper (Total recoverable and dissolved)
Hardness	Nickel (Total recoverable and dissolved)
Alkalinity	Nitrogen, Ammonia (total as N)
Conductivity	Nitrogen, Nitrate (total as N)
Chlorine, (Total residual)	Solids, Total Suspended
Iron, Total	Zinc, (Total recoverable and dissolved)
Lead (Total recoverable and dissolved)	
Boron	
Phosphorus, Total	

- (8) A complete and thorough report of the results of the chronic toxicity monitoring specified in this section shall be prepared as outlined in section 10 of EPA-821-R-02-012 and submitted to the Department for review on or before December 31 of each calendar year to the address specified in Section 7(B) of this permit.

SECTION 7: REPORTING REQUIREMENTS

- (A) The results of chemical analyses and any aquatic toxicity test required above shall be entered on the Discharge Monitoring Report (DMR), provided by this office, and reported to the Bureau of Materials Management and Compliance Assurance (Attn: DMR Processing) at the following address. The report shall also include a detailed explanation of any violations of the limitations specified. The DMR shall be received at this address by the last day of the month following the month in which samples are collected.

Bureau of Materials Management and Compliance Assurance
Water Permitting and Enforcement Division (Attn: DMR Processing)
Connecticut Department of Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

- (B) Complete and accurate aquatic toxicity test data, including percent survival of test organisms in each replicate test chamber, LC50 values and 95% confidence intervals for definitive test protocols, and all supporting

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chemical/physical measurements performed in association with any aquatic toxicity test, including measured daily flow and hours of operation for the 30 consecutive operating days prior to sample collection if compliance with a limit on Aquatic Toxicity is based on toxicity limits based on actual flows described in Section 7, shall be entered on the Aquatic Toxicity Monitoring Report form (ATMR) and sent to the Bureau of Water Protection and Land Reuse at the following address. The ATMR shall be received at this address by the last day of the month following the month in which samples are collected.

Bureau of Water Protection and Land Reuse (Attn: Aquatic Toxicity)
Connecticut Department of Environmental Protection
79 Elm St.
Hartford, CT 06106-5127

- (C) If this permit requires monitoring of a discharge on a calendar basis (e.g. Monthly, quarterly, etc.), but a discharge has not occurred within the frequency of sampling specified in the permit, the Permittee must submit the DMR and ATMR, as scheduled, indicating "NO DISCHARGE". For those Permittees whose required monitoring is discharge dependent (e.g. per batch), the minimum reporting frequency is monthly. Therefore, if there is no discharge during a calendar month for a batch discharge, a DMR must be submitted indicating such by the end of the following month.

SECTION 8: RECORDING AND REPORTING OF VIOLATIONS, ADDITIONAL TESTING REQUIREMENTS

- (A) If any sample analysis indicates that an Aquatic Toxicity effluent limitation in Section 5 of this permit has been exceeded, or that the test was invalid, another sample of the effluent shall be collected and tested for Aquatic Toxicity and associated chemical parameters, as described above in Section 5 and Section 6, and the results reported to the Bureau of Materials Management and Compliance Assurance (Attn: DMR Processing), at the address listed above, within 30 days of the exceedance or invalid test. Results of all tests, whether valid or invalid, shall be reported.
- (B) If any two consecutive test results or any three test results in a twelve month period indicates that an Aquatic Toxicity Limit has been exceeded, the Permittee shall immediately take all reasonable steps to eliminate toxicity wherever possible and shall submit a report to Bureau of Materials Management and Compliance Assurance (Attn: Aquatic Toxicity) for the review and approval of the Commissioner in accordance with section 22a-430-3(j)(10)(c) of the RCSA describing proposed steps to eliminate the toxic impact of the discharge on the receiving water body. Such a report shall include a proposed time schedule to accomplish toxicity reduction and the Permittee shall comply with any schedule approved by the Commissioner.
- (C) The Permittee shall notify the Bureau of Materials Management and Compliance Assurance, Water Permitting and Enforcement Division, within 72 hours and in writing within thirty days of the discharge of any substance listed in the application but not listed in the permit if the concentration or quantity of that substance exceeds two times the level listed in the application.

SECTION 9: COMPLIANCE SCHEDULE

- (A) On or before sixty (60) days after the initiation of Discharge Serial Numbers (DSNs) 101, 102, 103, 104 and 105, the Permittee shall submit a complete Attachment O (Part B discharge analysis of the permit application) for the Commissioner's review for the final effluent discharged from DSNs 101, 102, 103, 104 and 105. The Permittee must analyze such effluent for all substances listed in Table 1 and for those substances known or suspected present in Tables 2, 3 and 4 of the permit application.

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- (B) On or before one hundred and eighty (180) days after the initiation of the discharge (DSN 101), the Permittee shall submit for the Commissioner's review and written approval, a scope of study and schedule for performing seasonal thermal field monitoring verification work of such discharge into the Quinebaug River. Monitoring shall be conducted and the results shall be submitted no later three hundred and sixty five (365) days after the approval of the scope of work.
- (C) On or before sixty (60) days after the initiation of the discharge (DSN 101), the Permittee shall submit for the Commissioner's review and written approval a comprehensive and thorough scope of study for performing a one-year impingement study and a two-year entrainment monitoring and evaluation of the cooling water intake structure at such time the Commissioner provides written notification to the Permittee that anadromous fish populations are restored in the Quinebaug River upstream of the Aspinook Pond Dam. The scope of study shall provide a detailed schedule that, at a minimum, identifies the initiation and completion dates for the impingement study and entrainment monitoring and evaluation of the cooling water intake structure. A scheduled generating unit shut down shall not occur during the impingement study and entrainment monitoring and evaluation of the cooling water intake structure.
- (D) The Permittee shall perform the actions upon the Commissioner's written notification in accordance with the approved scope of study described in paragraph 9(C) in accordance with the approved schedule(s).
- (E) On or before ninety days (90) after completion of the actions described in paragraph 9(D) above, the Permittee shall submit for the Commissioner's review and written approval a comprehensive and thorough report on the findings of the impingement study and entrainment monitoring and evaluation.
- (F) After completing one year of entrainment monitoring, the Permittee may submit in writing to the Commissioner a request to consider the entrainment monitoring complete. In making such request, the required report and data associated with the first year of entrainment monitoring must be submitted with such request for the review and written approval of the Commissioner and shall, at a minimum, include a detailed narrative describing the reasons for such request. The Commissioner has the sole discretion to either approve or deny such request.
- (G) The Permittee shall use best efforts to submit to the Commissioner all documents required by this section of the permit in a complete and approvable form. If the Commissioner notifies the Permittee that any document or other action is deficient, and does not approve it with conditions or modifications, it is deemed disapproved, and the Permittee shall correct the deficiencies and resubmit it within the time specified by the Commissioner or, if no time is specified by the Commissioner, within thirty days of the Commissioner's notice of deficiencies. In approving any document or other action under this Compliance Schedule, the Commissioner may approve the document or other action as submitted or performed or with such conditions or modifications as the Commissioner deems necessary to carry out the purposes of this section of the permit. Nothing in this paragraph shall excuse noncompliance or delay.
- (H) Dates. The date of submission to the Commissioner of any document required by this section of the permit shall be the date such document is received by the Commissioner. The date of any notice by the Commissioner under this section of the permit, including but not limited to notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three days after it is mailed by the Commissioner, whichever is earlier. Except as otherwise specified in this permit, the word "day" as used in this section of the permit means calendar day. Any document or action which is required by this section only of the permit, to be submitted, or performed, by a date which falls on, Saturday, Sunday, or, a legal Connecticut or federal holiday, shall be submitted or performed on or before the next day which is not a Saturday, Sunday, or legal Connecticut or federal holiday.
- (I) Notification of noncompliance. In the event that the Permittee becomes aware that it did not or may not

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comply, or did not or may not comply on time, with any requirement of this section of the permit or of any document required hereunder, the Permittee shall immediately notify the Commissioner and shall take all reasonable steps to ensure that any noncompliance or delay is avoided or, if unavoidable, is minimized to the greatest extent possible. In so notifying the Commissioner, the Permittee shall state in writing the reasons for the noncompliance or delay and propose, for the review and written approval of the Commissioner, dates by which compliance will be achieved, and the Permittee shall comply with any dates that may be approved in writing by the Commissioner. Notification by the Permittee shall not excuse noncompliance or delay, and the Commissioner's approval of any compliance dates proposed shall not excuse noncompliance or delay unless specifically so stated by the Commissioner in writing.

- (J) Notice to Commissioner of changes. Within fifteen days of the date the Permittee becomes aware of a change in any information submitted to the Commissioner under this section of the permit, or that any such information was inaccurate or misleading or that any relevant information was omitted, the Permittee shall submit the correct or omitted information to the Commissioner.
- (K) Submission of documents. Any document, other than a discharge monitoring report, required to be submitted to the Commissioner under this section of the permit shall, unless otherwise specified in writing by the Commissioner, be directed to:

Charles Nezianya
Department of Environmental Protection
Bureau of Materials Management and Compliance Assurance
Water Permitting and Enforcement Division
79 Elm Street
Hartford, CT 06106-5127

This permit is hereby issued on

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Gina McCarthy
Commissioner

GM/cn

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DATA TRACKING AND TECHNICAL FACT SHEET

Permittee: Plainfield Renewable Energy, LLC

PAMS Company ID: 123206

PERMIT, ADDRESS, AND FACILITY DATA

PERMIT #: CT0030473

APPLICATION #: 200702055

FACILITY ID. 109-110

Permit #: SP0002426

APPLICATION #: 200800492

Mailing Address:					Location Address:						
Street:	20 Marshall Street, Suite 300				Street:	Norwich Road via Mill Brook Road					
City:	Norwalk	ST:	CT	Zip:	06854	City:	Plainfield	ST:	CT	Zip:	
Contact Name:	Daniel Donovan				DMR Contact	Daniel Donovan					
Phone No.:	(203) 354-1529				Phone No.:	(203) 354-1529					

PERMIT INFORMATION

DURATION 5 YEAR 10 YEAR ___ 30 YEAR ___

TYPE New Reissuance ___ Modification ___

CATEGORIZATION POINT (X) NON-POINT () GIS # ___

NPDES (X) PRETREAT () GROUND WATER(UIC) () GROUND WATER (OTHER) (X)

NPDES MAJOR (MA) _____

NPDES SIGNIFICANT MINOR or PRETREAT SIU (SI) _____

NPDES or PRETREATMENT MINOR (MI) (See attached NPDES rating sheet)

PRETREAT SIGNIFICANT INDUS USER (SIU) _____

PRETREAT CATEGORICAL (CIU) _____

POLLUTION PREVENTION MANDATE ___ ENVIRONMENTAL EQUITY ISSUE ___

COMPLIANCE ISSUES

COMPLIANCE SCHEDULE YES X NO (If yes check off what it is in relation to.)

POLLUTION PREVENTION ___ TREATMENT REQUIREMENT ___ WATER CONSERVATION

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WATER QUALITY REQUIREMENT REMEDIATION OTHER (Analyze for pollutants of concern and use the analytical report to complete Attachment O of the permit application.)

IS THE PERMITTEE SUBJECT TO A PENDING ENFORCEMENT ACTION? NO YES

OWNERSHIP CODE

Private Federal State Municipal (town only) Other public

DEP STAFF ENGINEER Charles Nezianya

PERMIT FEES

Discharge Code	DSN	Annual Fee
101060z	101	\$8,175.0
121000b	102	\$2,040.0
121000b	103	\$0.0
101060n	104	\$0.0
1060000	105	\$525.0

FOR NPDES DISCHARGES

Drainage basin Code: 3700-Quinebaug River

Present/Future Water Quality Standard: B

FOR SEWER DISCHARGES: NA

Discharge to The Regional Authority/Town/City of _____ POTW via Truck/Town of ___/its collection system. Facility ID of the POTW is _____.

FOR GROUNDWATER STATE PERMITS:

Drainage basin Code: 3700
n/a _____

Water Quality Standard: GA Impaired

Total Wells n/a WellType

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NATURE OF BUSINESS GENERATING DISCHARGE

A 37.5 megawatt (MW) generated electricity from steam produced as a result of the gasification of biomass (wood)

PROCESS AND TREATMENT DESCRIPTION (by DSN)

DSN 101 - Maximum Daily Flow = 173,571 gallons per day - Treated cooling tower blowdown wastewater - Addition of sodium bisulfite to the effluent to destroy chlorine, total residual

DSN 102- Maximum Daily Flow = 225,000 gallons per day - Fire pump test wastewater (Intermittent Discharge) -No treatment is necessary

DSN 103 - Maximum Daily Flow = 1,000 gallons per day - Fire hydrant test wastewater (Intermittent Discharge) -No treatment is necessary

DSN 104 - Maximum Daily Flow = 250,000 gallons per day - Make-up supply tank drain and overflow wastewaters (Intermittent Discharge)-No treatment is necessary

DSN 105 - Maximum Daily Flow = 10,000 gallons per day - Demineralized water tank overflow wastewater (Intermittent Discharge) -No treatment is necessary

Monitoring Location 101-H - Maximum Intake Cooling Water = 893,000 gallons per day- (Intake Cooling Water) - Cylindrical wedge wire screen to minimize impingement and entrainment

Intake Cooling Water Treatment (On as needed basis) - Neutralization, Coagulation, Flocculation, Clarification, Filtration

RESOURCES USED TO DRAFT PERMIT

- Federal Effluent Limitation Guideline 40 CFR 423 (not subject to this subpart because fossil fuel will not be used) This subpart was used as a reference in developing effluent monitoring and limitations for this discharge.
- Performance Standards
- Federal Development Document name of category
- Treatability Manual
- Department File Information
- Connecticut Water Quality Standards
- Anti-degradation Policy
- Coastal Management Consistency Review Form
- Other - Explain

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BASIS FOR LIMITATIONS, STANDARDS OR CONDITIONS

- x Best Professional Judgment (See Other Comments) - Ammonia, aluminum, total residual chlorine, copper, lead, boron, temperature, turbidity, phosphorus, nitrogen, iron, ph, Total Suspended Solids and zinc

- x Case-by-Case Determination (See Other Comments) - - Ammonia, aluminum, total residual chlorine, copper, lead, boron, temperature, turbidity, phosphorus, nitrogen, iron, pH, Total Suspended Solids and zinc

- x In order to meet in-stream water quality (See General Comments) - Aluminum, total residual chlorine, copper, lead and zinc

GENERAL COMMENTS

DSN 101

Water quality based discharge limitations were included in this permit for consistency with Connecticut Water Quality Standards and criteria, pursuant to 40 CFR 122.44(d). Each parameter was evaluated for consistency with the available aquatic life criteria (acute and chronic) and human health (fish consumption only) criteria, considering the zone of influence allocated to the facility where appropriate. The statistical procedures outlined in the EPA Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001) were employed to calculate the limits. The most restrictive of the water quality limitations, aquatic life acute, aquatic life chronic, and human health, was compared with limitations developed according to State and Federal Best Available Technology (BAT). Where the water quality based limitations were more restrictive than BAT, the water quality based limitation was included in the permit.

Brief Overview

PRE is proposing to construct a 37.5 MW (megawatt) biomass facility in Plainfield. The facility will be fueled solely by wood (biomass) and will utilize a fluidized bed gasification process with a single close-coupled boiler to power the steam turbine generator. The biomass fuel will come from various sources, which includes forest management residues, land clearing debris, and waste wood from industries and construction and demolition (C&D) waste. Bio-diesel (B100) will be used to supplement the solid fuel supply during startup, refractory curing, and for process stabilization.

Effluent Monitoring and Limitations Requirements

Because this facility will not use fossil fuel, effluent limitations and monitoring requirements specified in 40 CFR 423 (Steam Electric) do not specifically apply. The proposed effluent limitations are based on a case by case determination using the criteria of best professional judgment. Aquatic toxicity monitoring and limits are proposed for DSN 101, water quality based effluent limitations are proposed for aluminum, total residual chlorine, copper, lead and zinc. For DSNs 102, 103, 104 and 105, these discharges are intermittent and will be discharged into the onsite in- ground stormwater infiltration systems.

Monitoring only is being proposed for all chemical parameters required for these discharges except for pH, which has been limited within a specified range.

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The Permittee has provided projected effluent quality data in Attachment O of the permit application and additional information provided in the report, dated February 19, 2008 and filed with the Department on February 20, 2008, for the discharges to the groundwater. Department staff has reviewed the information and determined that such discharges are consistent with applicable Ground Water Quality Standards GW2 and GW12(C).

For the withdrawal of cooling water from the Quinebaug River, only monitoring is being proposed for all parameters identified in Table C. This monitoring will be required prior to water treatment for suspended solids removal using coagulation, flocculation and settling.

For DSN 101- Flow meter will be installed to monitor flow.

For DSNs 102, 103, 104 and 105 flow will be estimated using generally acceptable engineering calculations.

Section 316(a) of the Federal Water Pollution Control Act (FWPCA) Determination

PRE is proposing to withdraw a maximum volume of 893,000 gallons per day from Quinebaug River. This non-contact cooling water will be recirculated five times within the cooling tower system and about 20% of this water will be discharged back to the river via a submerged single port diffuser. PRE is planning to use some of this water for various activities within the facility.

PRE is proposing to install and use a single port diffuser which will be a submerged pipe that will favor rapid dilution and a large bulk mixing ratio for the discharge. The location of the single port outfall pipe was selected and designed to discharge into the center of the river where the water depths are at a maximum and approximately 100 feet downstream from the intake pipe. PRE also stated in the permit application that this design is consistent with the recommendations by the EPA that cooling water systems should optimize the dissipation of heat and minimize the area affected by excessive temperatures. Further, the design is also consistent with EPA's emphasis that thermal discharges should be located in areas with good flushing characteristics and should minimize the addition of heat into receiving waters.

EPA's modeling software "Visual Plumes" was used to model the characteristics of the expected thermal plume associated with the discharge of heated effluent into the Quinebaug River. This software generates a three-dimensional model of the geometry of the thermal plume under the assumption that the discharge and ambient flow conditions are in a steady state. The results of this analysis are as follows: under low flow conditions the temperature of the discharge reaches ambient river temperature at a distance of approximately 22.3 feet downstream from the diffuser under August low flow conditions, and 324.8 feet from the diffuser under mean flow conditions. The temperature of the discharge at the diffuser was 84 degrees F and 77.25 degrees F where the thermal plume reaches ambient river temperature under August low flow conditions. The discharge temperature was 70 degrees F at the diffuser and 55.02 degrees F where the thermal plume reaches ambient river temperature under mean flow conditions.

Due to the rapid dilution of elevated temperatures and open water location of the diffuser, the potential impacts to the local ecosystem is expected to be minimal.

The segment of Quinebaug River where the discharge will be located is classified as a class "B" under the Connecticut Water Quality Standards (WQS). The allowable temperature increase criterion for a class "B" surface water states: "There shall be no changes from natural conditions that would impair any existing or designated uses assigned to this class and, no case exceed 85 degrees F, or in any case raise the temperature of surface water more than 4 degrees F."

Based on the Visual Plumes modeling analysis report submitted to the DEP, allocation of the thermal discharge mixing zone for this discharge of 22.3 feet from the diffuser is needed to meet the WQS criterion for allowable temperature increase. The modeling analysis indicates that the heated discharge dissipates and mixes rapidly with ambient water using the submergible diffuser, which is expected to make the extent of the thermal plume small.

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Although PRE submitted a letter requesting a thermal variance under section 316(a) of the FWPCA, Department staff have determined that this is not required since the discharge can meet the water quality standards in the river. Department staff is recommending that the zone of influence of 22.3 feet be granted pursuant to Paragraph 10 of the WQS.

DEP staff is also requiring that PRE conduct temperature field verification monitoring of the Quinebaug River after the discharge has been initiated to verify the temperature values used in the Visual Plumes modeling analysis data. (See Section 9 Paragraph B of the permit)

Consistent with the WQS, the proposed maximum instantaneous temperature limitation for DSN 101 is 84 degrees F and monitoring only is being proposed for the temperature differential between the intake water and the discharge.

Section 316(b) of the FWPCA Determination

PRE is proposing to construct cooling water intake structures to withdraw cooling water from the Quinebaug River and is, therefore, required to comply with Section 316(b) of the FWPCA. Section 316(b) of the FWPCA states: "Any standard established pursuant to section 301 or section 306 of this Act and applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact."

As a new facility, PRE is required to comply with the regulations specified in 40 CFR 125 Subpart I-Requirements Applicable to Cooling Water Intake Structures for New Facilities Under Section 316(b) of the Act, specifically 40 CFR 125.80 (a) and (c). The proposed cooling water withdrawal is below the "threshold" value specified in Track I and Track II of 40 CFR 125.84. The performance standard that applies to this facility is Best Available Technology, which has been interpreted as synonymous with BTA, using is Best Professional Judgment (BPJ) on a "case by case" basis, as specified in 40 CFR 125.80(c), and 40 CFR 125.3(d).

- Cooling Water Intake Structure Location

Department staff has reviewed the PRE permit application and subsequent submittals related to the location of the cooling water intake structure and has determined that that the proposed intake water withdrawal from the Quinebaug River will not have an adverse impact to the environment. Additionally, the intake/discharge meets applicable Surface Water Quality Standards (see WQS Paragraph 10 and Class "B" criteria). (*See Interoffice Memorandum from Brian D. Murphy, Inland Fisheries Division to Sara Radasci, Inland Water Resources Division, dated May 23, 2007*). PRE is required to implement and comply with the mitigation and monitoring plan dated January 22, 2008 that was filed with the Department and to conduct impingement and entrainment monitoring in accordance with Sections 9 Paragraphs C, D, E and F of this permit.

- Cooling Water Intake Structure Design

PRE is proposing to use cylindrical wedgewire screens at the inlet of the cooling water intake structures to minimize impingement and entrainment impact to aquatic organisms in the river.

Cylindrical wedgewire screen is expected to eliminate impingement and reduce entrainment to de minimis levels through a combination of small slot sizes and low approach velocities of 0.5 feet per second or less. The features of the wedgewire screen specifically designed to reduce entrainment and eliminate impingement of fish and invertebrate species include simple passive design, low intake velocity, vee-wire construction, smooth surfaces and in-situ cleaning. Screen backwashing using an airburst system will be available if needed. (*See PRE NPDES permit application on Section 316(b)*)

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- Cooling Water Intake Structure Construction

The cooling water intake structure will be situated on a 15.5 acre parcel located on Packer Road in the Town of Canterbury approximately two miles west from the facility site. To minimize any adverse impact to the wetlands and rare, threatened, and endangered species identified by the Department from the location, construction, operation and maintenance of cooling water intake structures, PRE is required to implement and comply with the mitigation and monitoring plan entitled, "Plainfield Renewable Energy, LLC, Proposed 37.5MW Biomass Facility, Mitigation and Monitoring Plan", dated January 2008 and revised through April 1, 2008, prepared by Kleinschmidt. PRE will also be required to comply with such plan to be eligible for coverage under the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities.

- Cooling Water Intake Structure Capacity

The proposed maximum water withdrawal through the cooling water intake structure is 0.893 MGD from the Quinebaug River. PRE will cycle Quinebaug River water through a cooling tower five times and the remaining 20% water will then be discharged back into the center of the river via a submerged single port diffuser.

Based on the Department's staff review, water withdrawal from the Quinebaug River will not result in a significant impact on river flow. Based on a 7-day, 10-year low flow (7Q10) value of 84.43 cubic feet second (cfs), this water withdrawal will be approximately 1.6% of the 7Q10 flow of the river. A "conventional" configuration of shoreline intake traveling screens, and fish return is not required by the virtue of the use of "wedge wire" intake screen, which will not impinge fish, and will not cause significant entrainment.

Based on a case by case determination using the criteria of BPJ pursuant to Section 22a-430-4(m) of the Regulations of Connecticut State Agencies (RCSA) and 40 CFR 125.80(c) and 40 CFR 125.3(d), Department staff is recommending that the Commissioner make a determination that the cooling water intake structure (closed cycle recirculating system) reflects the BTA that can be installed at this facility.