

RECEIVED

## Puget Sound Clean Air Agency

Source of  
Construction No. **9815**Registration No. **29205**

Date

BY:.....

HEREBY ISSUES AN ORDER OF APPROVAL  
TO CONSTRUCT, INSTALL, OR ESTABLISHPuget Sound  
Clean Air Agency

Landfill Gas Reclamation processing system rated to produce 4000 cfm of pipeline quality natural gas, to also include 12 Detroit Diesel Series 60 compression ignited Engine Generators rated at 350 kW each using landfill gas or diesel fuel oil, controlled by two (2) selective catalytic NOx reduction units rated for 15,000 cfm, two (2) oxidation catalysts rated for 15,000 cfm, a thermal oxidizer rated at 5535 cfm and an emergency flare rated for 5830 cfm.

## APPLICANT

**Robert Greene**  
**Bio Energy (Washington), LLC**  
**2250 Dabney Road**  
**Richmond, VA 23230**

## OWNER

**Bio Energy (Washington), LLC**  
**2250 Dabney Road**  
**Richmond, VA 23230**

## INSTALLATION ADDRESS

**Bio Energy (Washington), LLC, 16645 228th Street, Maple Valley, WA, 98030**

## THIS ORDER IS ISSUED SUBJECT TO THE FOLLOWING RESTRICTIONS AND CONDITIONS

- Approval is hereby granted as provided in Article 6 of Regulation I of the Puget Sound Clean Air Agency to the applicant to install or establish the equipment, device or process described hereon at the INSTALLATION ADDRESS in accordance with the plans and specifications on file in the Engineering Division of the Puget Sound Clean Air Agency.
- This approval does not relieve the applicant or owner of any requirement of any other governmental agency.
- Except during startup, shutdown, and periods of "shifting modes" Bio Energy shall not exceed the following one hour average limits from each Detroit Diesel Series 60 Engine Generator as measured by a compliance source test that follows the requirements of Regulation I, Section 3.07.

NOx using EPA Ref. Method 7E

- 0.35 lbs/hr when using when co-firing liquid and gaseous fuels, (Mode 3)
- 1.2 lbs/hour when fired on liquid fuel, (Mode 1)

CO using EPA Ref. Method 1B

- 0.6 lbs/hr when using when co-firing liquid and gaseous fuels, (Mode 3)
- 0.14 lbs/hour when fired on liquid fuel, (Mode 1)

Where on Mode 1 liquid fuel is used for starting the engine and bringing it up to full electrical power production, Mode 2 is the short period of time when gaseous fuel is mixed with the liquid fuel while shifting modes until, in Mode 3 the engine is operated at steady state in dual-fuel mode, with landfill gas derived fuel providing most of the energy needed to operate the engine generators.

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4. Except during startup, shutdown, and periods of "shifting modes" Bio Energy shall not exceed the following one hour average limits from each Detroit Diesel Series 60 Engine Generator as measured by a compliance source test that follows the requirements of Regulation 1, Section 3.07.

VOC using EPA Ref. Method 25A

(a) 0.08 lbs/hr when using when co-firing liquid and gaseous fuels, (Mode 3)

(b) 0.02 lbs/hour when fired on liquid fuel, (Mode 1)

PM10 using EPA Ref. Method 5 test as modified by Puget Sound Clean Air Agency Board Resolution 540 dated August 11, 1983

(a) 0.04 lbs/hr when using when co-firing liquid and gaseous fuels, (Mode 3)

(b) 0.04 lbs/hour when fired on liquid fuel, (Mode 1)

Formaldehyde - 0.038 lb/hour

5. Except during startup, shutdown, and periods of "shifting modes" Bio Energy shall not exceed from any emission source an Opacity greater than 5% opacity for a period or periods aggregating more than 3 minutes in any 1 hour as determined by WDOE Method 9A.

6. Bio Energy shall reduce the Non-Methane Organic Compounds (NMOC) in the waste gas thermal oxidizer by 98 weight percent, or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at 3 percent oxygen.

7. To demonstrate compliance with Condition Nos. 3 thru 6 above Bio Energy shall conduct annual source tests of the Internal Combustion Engine Generators and the Thermal Oxidizer. Bio Energy shall develop an emission testing plan following Regulation 1, Section 3.07, to include prescribed modes of operation, and conduct the first source test of the combustion sources within 60 days of achieving maximum production but no more than 180 days after initial startup.

8. Bio Energy shall monitor compliance with condition 3 on a weekly basis until four consecutive weeks of data is collected and monthly thereafter by measuring the emissions after all control equipment using a combustion analyzer according to EPA Conditional Test Method 034 or by using an exhaust gas analyzer meeting the specifications contained in (I) Steady-State Exhaust Analysis System of Appendix D-Steady-State Short Test Equipment of Subpart S-Inspection/Maintenance Program Requirements of Part 51 of chapter 1, Title 40 of the Code of Federal Regulations in effect as of July 1, 2000. Any monitoring result that indicates noncompliance with the conditions in this Order shall be reported to the Agency within 30 days.

9. Bio Energy shall, prior to startup, submit their plan for adjusting Urea dosing of the SCR catalyst to account for variations in the number of engines and their power loads used in each emissions control train. The plan shall include control algorithms based on a combination of engine output (kW) and gas fraction for the engines in the group.

10. Bio Energy shall monitor engine output (kW), gas fraction, fuel consumption (gph) reported by the engine control module, liquid fuel flow to the facility, fuel gas flow and methane content of the fuel gas. All parameters except for methane content shall be continuously monitored and recorded in an electronic database. Bio Energy shall then use these

## Order of Approval for NC No. 9815

7/1/15

logs and emissions factors based on the most recent source test results, to report annual emissions required by Regulation I, Article 5.05(b).

11. Bio Energy shall only burn liquid fuels that qualify as 15 ppm Ultra-Low Sulfur Fuel (ULSD).

12. Facility Wide Inspections - Fugitive Dust, Odor & Methane:

(a) All digester gas shall be routed either to the Landfill Gas Reclamation processing system, an engine generator, to the thermal oxidizer, or the emergency flare.

(b) Bio Energy shall conduct inspections of the property weekly to ensure that all activities are operating in good working order to minimize the generation or release of odors, methane and fugitive dust.

(c) Bio Energy shall document the results of each inspection, to include the corrective action taken (along with date and time) in response to potential compliance problems as identified in this condition and in response to operational practices which are inconsistent with respect to the O&M Plan or Puget Sound Clean Air Agency regulations.

(d) Bio Energy shall, as soon as possible but no later than one calendar day after identification, correct any potential compliance problems identified during these inspections.

13. Recordkeeping Requirements:

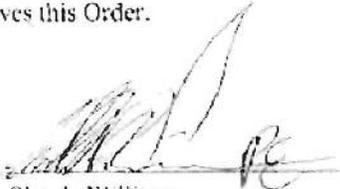
(a) All records of observations and supporting documentation which are required by this Order shall be completed contemporaneously.

(b) Each facility-wide inspection and observation, required on a weekly basis by this Order, shall be completed on a day when the site is in operation.

(c) All records and documentation which are required by this Order shall be maintained onsite for two years, and made available to Agency representatives upon request.

### APPEAL RIGHTS

Pursuant to Puget Sound Clean Air Agency's Regulation I, Section 3.17 and RCW 43.21B.310, this Order may be appealed to the Pollution Control Hearings Board (PCHB). To appeal to the PCHB, a written notice of appeal must be filed with the PCHB and a copy served upon Puget Sound Clean Air Agency within 30 days of the date the applicant receives this Order.

  
Claude Williams  
Reviewing Engineer

ns

  
Steven Van Slyke  
Supervising Engineer

# Notice of Completion

## WARNING:

Regulation I, Section 6.09, requires that the owner or applicant notify the Agency of the completion of the work covered by the application and when its operation will begin. This form is provided for your convenience to assist you in complying with this part of the Regulation.

### APPLICANT or OWNER SECTION

Mail to: Puget Sound Clean Air Agency  
Compliance Division  
1904 3rd Ave, Ste 105  
Seattle, WA 98101-3317

The project described below was completed on \_\_\_\_\_

\_\_\_\_\_  
Signature of Owner and/or Applicant

\_\_\_\_\_  
Title

\_\_\_\_\_  
Phone

\_\_\_\_\_  
Date

### FOR AGENCY USE ONLY

Notice of Construction No. 9815  
Registration No. 29205

#### Project Description

Landfill Gas Reclamation processing system rated to produce 4000 cfm of pipeline quality natural gas, to also include 12 Detroit Diesel Series 60 compression ignited Engine Generators rated at 350 kW each using landfill gas or diesel fuel oil, controlled by two (2) selective catalytic NOx reduction units rated for 15,000 cfm, two (2) oxidation catalysts rated for 15,000 cfm, a thermal oxidizer rated at 5535 cfm and an emergency flare rated for 5830 cfm.

#### Applicant

Robert Greene  
Bio Energy (Washington), LLC  
2250 Dabney Road  
Richmond, VA, 23230

#### Owner

Bio Energy (Washington), LLC  
2250 Dabney Road  
Richmond, VA, 23230

Conditions on  
Reverse Side

#### Location

Bio Energy (Washington), LLC, 16645 228th Street, Maple Valley, WA, 98030

Inspector Check

Engineer CMW and Inspector check.

Follow up \_\_\_\_\_ (Estimated completion date plus 7)

Date Inspected \_\_\_\_\_ Inspector \_\_\_\_\_

Remarks \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Notice of Completion for NC No. 9815

### CONDITIONS

3. Except during startup, shutdown, and periods of "shifting modes" Bio Energy shall not exceed the following one hour average limits from each Detroit Diesel Series 60 Engine Generator as measured by a compliance source test that follows the requirements of Regulation I, Section 3.07.

NOx using EPA Ref. Method 7E

(a) 0.35 lbs/hr when using when co-firing liquid and gaseous fuels, (Mode 3)

(b) 1.2 lbs/hour when fired on liquid fuel, (Mode 1)

CO using EPA Ref. Method 10

(a) 0.6 lbs/hr when using when co-firing liquid and gaseous fuels, (Mode 3)

(b) 0.14 lbs/hour when fired on liquid fuel, (Mode 1)

Where on Mode 1 liquid fuel is used for starting the engine and bringing it up to full electrical power production, Mode 2 is the short period of time when gaseous fuel is mixed with the liquid fuel while shifting modes until, in Mode 3 the engine is operated at steady state in dual-fuel mode, with landfill gas derived fuel providing most of the energy needed to operate the engine generators.

4. Except during startup, shutdown, and periods of "shifting modes" Bio Energy shall not exceed the following one hour average limits from each Detroit Diesel Series 60 Engine Generator as measured by a compliance source test that follows the requirements of Regulation I, Section 3.07.

VOC using EPA Ref. Method 25A

(a) 0.08 lbs/hr when using when co-firing liquid and gaseous fuels, (Mode 3)

(b) 0.02 lbs/hour when fired on liquid fuel, (Mode 1)

PM10 using EPA Ref. Method 5 test as modified by Puget Sound Clean Air Agency Board Resolution 540 dated August 11, 1983

(a) 0.04 lbs/hr when using when co-firing liquid and gaseous fuels, (Mode 3)

(b) 0.04 lbs/hour when fired on liquid fuel, (Mode 1)

Formaldehyde - 0.038 lb/hour

5. Except during startup, shutdown, and periods of "shifting modes" Bio Energy shall not exceed from any emission source an Opacity greater than 5% opacity for a period or periods aggregating more than 3 minutes in any 1 hour as determined by WDOE Method 9A.

## Notice of Completion for NC No. 9815

6. Bio Energy shall reduce the Non-Methane Organic Compounds (NMOC) in the waste gas thermal oxidizer by 98 weight percent, or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at 3 percent oxygen.
7. To demonstrate compliance with Condition Nos. 3 thru 6 above Bio Energy shall conduct annual source tests of the Internal Combustion Engine Generators and the Thermal Oxidizer. Bio Energy shall develop an emission testing plan following Regulation I, Section 3.07, to include prescribed modes of operation, and conduct the first source test of the combustion sources within 60 days of achieving maximum production but no more than 180 days after initial startup.
8. Bio Energy shall monitor compliance with condition 3 on a weekly basis until four consecutive weeks of data is collected and monthly thereafter by measuring the emissions after all control equipment using a combustion analyzer according to EPA Conditional Test Method 034 or by using an exhaust gas analyzer meeting the specifications contained in (f) Steady-State Exhaust Analysis System of Appendix D-Steady-State Short Test Equipment of Subpart S-Inspection/Maintenance Program Requirements of Part 51 of chapter 1, Title 40 of the Code of Federal Regulations in effect as of July 1, 2000. Any monitoring result that indicates noncompliance with the conditions in this Order shall be reported to the Agency within 30 days.
9. Bio Energy shall, prior to startup, submit their plan for adjusting Urea dosing of the SCR catalyst to account for variations in the number of engines and their power loads used in each emissions control train. The plan shall include control algorithms based on a combination of engine output (kW) and gas fraction for the engines in the group.
10. Bio Energy shall monitor engine output (kW), gas fraction, fuel consumption (gph) reported by the engine control module, liquid fuel flow to the facility, fuel gas flow and methane content of the fuel gas. All parameters except for methane content shall be continuously monitored and recorded in an electronic database. Bio Energy shall then use these logs and emissions factors based on the most recent source test results, to report annual emissions required by Regulation I, Article 5.05(b).
11. Bio Energy shall only burn liquid fuels that qualify as 15 ppm Ultra-Low Sulfur Fuel (ULSD).
12. Facility Wide Inspections - Fugitive Dust, Odor & Methane:
  - (a) All digester gas shall be routed either to the Landfill Gas Reclamation processing system, an engine generator, to the thermal oxidizer, or the emergency flare.
  - (b) Bio Energy shall conduct inspections of the property weekly to ensure that all activities are operating in good working order to minimize the generation or release of odors, methane and fugitive dust.
  - (c) Bio Energy shall document the results of each inspection, to include the corrective action taken (along with date and time) in response to potential compliance problems as identified in this condition and in response to operational practices which are inconsistent with respect to the O&M Plan or Puget Sound Clean Air Agency regulations.
  - (d) Bio Energy shall, as soon as possible but no later than one calendar day after identification, correct any potential compliance problems identified during these inspections.
13. Recordkeeping Requirements:
  - (a) All records of observations and supporting documentation which are required by this Order shall be completed contemporaneously.

## Notice of Completion for NC No. 9815

(b) Each facility-wide inspection and observation, required on a weekly basis by this Order, shall be completed on a day when the site is in operation

(c) All records and documentation which are required by this Order shall be maintained onsite for two years, and made available to Agency representatives upon request.



# Puget Sound Clean Air Agency

Notice of  
Construction No. 2900  
Registration No. 29205  
Date  
MAR 09 2009

## HEREBY ISSUES AN ORDER OF APPROVAL TO CONSTRUCT, INSTALL, OR ESTABLISH

Six (6) Detroit Diesel Series 60 compression ignited Engine Generators rated at 350 kW each using landfill gas or diesel fuel oil, controlled by one (1) selective catalytic NOx reduction unit rated for 15,000 cfm, and one (1) oxidation catalysts rated for 15,000 cfm

### APPLICANT

**Robert Greene**  
**Bio Energy (Washington), LLC**  
**2250 Dabney Road**  
**Richmond, VA 23230**

### OWNER

**Bio Energy (Washington), LLC**  
**2250 Dabney Road**  
**Richmond, VA 23230**

### INSTALLATION ADDRESS

**Bio Energy (Washington), LLC, 16645 228th Street, Maple Valley, WA, 98030**

### THIS ORDER IS ISSUED SUBJECT TO THE FOLLOWING RESTRICTIONS AND CONDITIONS

1. Approval is hereby granted as provided in Article 6 of Regulation I of the Puget Sound Clean Air Agency to the applicant to install or establish the equipment, device or process described hereon at the INSTALLATION ADDRESS in accordance with the plans and specifications on file in the Engineering Division of the Puget Sound Clean Air Agency.
2. This approval does not relieve the applicant or owner of any requirement of any other governmental agency.
3. Except during startup, shutdown, and periods of "shifting modes" Bio Energy shall not exceed the following one hour average limits from each Detroit Diesel Series 60 Engine Generator as measured by a compliance source test that follows the requirements of Regulation I, Section 3.07.

NOx using EPA Ref. Method 7E

- (a) 0.35 lbs/hr when using when co-firing liquid and gaseous fuels, (Mode 3)
- (b) 1.2 lbs/hour when fired on liquid fuel, (Mode 1)

CO using EPA Ref. Method 10

- (a) 0.6 lbs/hr when using when co-firing liquid and gaseous fuels, (Mode 3)
- (b) 0.14 lbs/hour when fired on liquid fuel, (Mode 1)

Where on Mode 1 liquid fuel is used for starting the engine and bringing it up to full electrical power production, Mode 2 is the short period of time when gaseous fuel is mixed with the liquid fuel while shifting modes until, in Mode 3 the engine is operated at steady state in dual-fuel mode, with landfill gas derived fuel providing most of the energy needed to operate the engine generators:

## Order of Approval for NC No. 9900

MAR 09 2009

4. Except during startup, shutdown, and periods of "shifting modes" Bio Energy shall not exceed the following one hour average limits from each Detroit Diesel Series 60 Engine Generator as measured by a compliance source test that follows the requirements of Regulation I, Section 3.07.

VOC using EPA Ref. Method 25A

(a) 0.08 lbs/hr when using when co-firing liquid and gaseous fuels, (Mode 3)

(b) 0.02 lbs/hour when fired on liquid fuel, (Mode 1)

PM10 using EPA Ref. Method 5 test as modified by Puget Sound Clean Air Agency Board Resolution 540 dated August 11, 1983

(a) 0.04 lbs/hr when using when co-firing liquid and gaseous fuels, (Mode 3)

(b) 0.04 lbs/hour when fired on liquid fuel, (Mode 1)

Formaldehyde - 0.038 lb/hour

5. Except during startup, shutdown, and periods of "shifting modes" Bio Energy shall not exceed from any emission source an Opacity greater than 5% opacity for a period or periods aggregating more than 3 minutes in any 1 hour as determined by WDOE Method 9A.

6. Bio Energy shall reduce the Non-Methane Organic Compounds (NMOC) in the waste gas thermal oxidizer by 98 weight percent, or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at 3 percent oxygen.

7. To demonstrate compliance with Condition Nos. 3 thru 6 above Bio Energy shall conduct annual source tests of the Internal Combustion Engine. Bio Energy shall develop an emission testing plan following Regulation I, Section 3.07, to include prescribed modes of operation, and conduct the first source test of the combustion sources within 60 days of achieving maximum production but no more that 180 days after initial startup.

8. Bio Energy shall monitor compliance with condition 3 on a weekly basis until four consecutive weeks of data is collected and monthly thereafter by measuring the emissions after all control equipment using a combustion analyzer according to EPA Conditional Test Method 034 or by using an exhaust gas analyzer meeting the specifications contained in (I) Steady-State Exhaust Analysis System of Appendix D-Steady-State Short Test Equipment of Subpart S-Inspection/Maintenance Program Requirements of Part 51 of chapter 1, Title 40 of the Code of Federal Regulations in effect as of July 1, 2000. Any monitoring result that indicates noncompliance with the conditions in this Order shall be reported to the Agency within 30 days.

9. Bio Energy shall, prior to startup, submit their plan for adjusting Urea dosing of the SCR catalyst to account for variations in the number of engines and their power loads used in each emissions control train. The plan shall include control algorithms based on a combination of engine output (kW) and gas fraction for the engines in the group.

10. Bio Energy shall monitor engine output (kW), gas fraction, fuel consumption (gph) reported by the engine control module, liquid fuel flow to the facility, fuel gas flow and methane content of the fuel gas. All parameters except for methane content shall be continuously monitored and recorded in an electronic database. Bio Energy shall then use these logs and emissions factors based on the most recent source test results, to report annual emissions required by Regulation I,

## Order of Approval for NC No. 9900

MAR 09 2009

Article 5.05(b).

11. Bio Energy shall only burn liquid fuels that qualify as 15 ppm Ultra-Low Sulfur Fuel (ULSD).

12. Recordkeeping Requirements:

(a) All records of observations and supporting documentation which are required by this Order shall be completed contemporaneously.

(b) Each facility-wide inspection and observation, required on a weekly basis by this Order, shall be completed on a day when the site is in operation

(c) All records and documentation which are required by this Order shall be maintained onsite for two years, and made available to Agency representatives upon request.

13. Facility Wide Emission Limit - Bio Energy shall limit facility-wide emissions of Carbon Monoxide (CO) to less than 97.1 tons during any 12 consecutive months after the date of this Order.

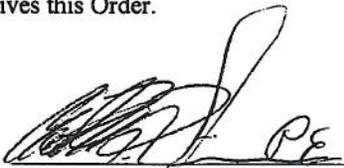
14. Within 30 days of the end of each month, Bio Energy shall calculate monthly emissions of Carbon Monoxide and prepare monthly records that demonstrate compliance with Condition 13 of this Order. Records shall include the following:

(a) Emission factors and assumptions used to calculate emissions. All such emission factors shall be those submitted by Bio Energy as part of the application for this Order, with any changes to emission factors, or calculation methods subject to approval in advance by the Puget Sound Clean Air Agency.

(b) A rolling 12-month calculation of Carbon Monoxide (CO) emitted over the previous 12-month period. These records shall be maintained for five years from the date of origination and made available to Puget Sound Clean Air Agency personnel upon request.

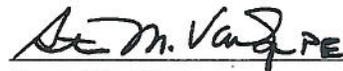
### APPEAL RIGHTS

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Claude Williams  
Reviewing Engineer

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Steven Van Slyke  
Supervising Engineer