

05/07/14

PERMITS/PLAN APPROVALS

NEW Application of Significance

Green Planet

On May 7, 2014, Karen Irons of the Air Quality Permits Program met, in Philadelphia, with EPA Region III staff and a representative of Green Planet regarding the company's proposed poultry litter to energy project. Green Planet needs a fuel legitimacy determination from EPA Region III that the poultry litter that the company will be utilizing can be considered a fuel and not a solid waste. EPA has made similar determinations in the past for other poultry litter to energy projects but these determinations are made on a case by case basis.

7. Provide a brief update on the Clean Bay Power Initiative, including noting what next steps are needed or expected.

Meeting in Annapolis with company and the Maryland Energy Administration on July 15, 2014. No timeframe was provided at the meeting for when an air quality permit to construct application might be expected. However, Green Planet was encouraged to request a pre-application meeting with ARMA prior to submitting their application.

07/16/14

PERMITS/PLAN APPROVALS

NEW Application of Significance

Green Planet

On July 15, 2014, Angelo Bianca and Karen Irons of ARMA attended a meeting at the Maryland Energy Administration office in Annapolis regarding the proposed Eastern Shore Green Planet poultry litter to energy facility. Per a January 2013 press release from the Governor's office, "Governor Martin O'Malley today announced the State of Maryland, in partnership with the University System of Maryland, will enter into a power purchase agreement with Green Planet Power Solutions to purchase a minimum of 10 MW of electricity produced from animal waste in Caroline County. The contract, awarded via the competitive Clean Bay Power process, promotes the use of renewable energy, reduces Maryland's contribution to agricultural runoff in the Chesapeake Bay, and encourages job creation while promoting Maryland's farm industry." It appears that Green Planet is now proposing to locate in Pocomoke City at a site that was previously permitted in 2010 for an ethanol plant; the ethanol plant was never built and the air permit to construct expired in 2011. No timeframe was provided at the meeting as to when an air permit to construct might be submitted. However, Green Planet was encouraged to request a pre-application meeting with ARMA prior to submitting their application.



Karen Irons -MDE- <karen.iron@maryland.gov>

Fwd: Green Planet Power Solutions

1 message

Angelo Bianca -MDE- <angelo.bianca@maryland.gov>
To: Karen Irons -MDE- <karen.iron@maryland.gov>

Wed, Mar 5, 2014 at 7:05 AM

Didn't we meet with the company and told them of the need to go to epa to get a fuel legitimacy determination?

Sent from my iPhone

Begin forwarded message:

From: George Aburn -MDE- <george.aburn@maryland.gov>
Date: March 5, 2014, 6:27:37 AM EST
To: Robert Summers -MDE- <robert.summers@maryland.gov>, Angelo Bianca -MDE- <angelo.bianca@maryland.gov>
Subject: Re: Green Planet Power Solutions

Will do

AB - see me

On Tue, Mar 4, 2014 at 9:51 PM, Robert Summers -MDE- <robert.summers@maryland.gov> wrote:

Please see Abby's note below and let me know what your assessment is. Thanks.

Robert M. Summers, Ph.D.
Secretary
Maryland Department of the Environment
Phone: 410-537-4187

Begin forwarded message:

From: Abigail Hopper -GOV- <abigail.hopper@maryland.gov>
Date: March 4, 2014 at 6:41:27 PM EST
To: Robert Summers -MDE- <robert.summers@maryland.gov>
Cc: "Ashley Valis (GOV)" <ashley.valis@maryland.gov>
Subject: Green Planet Power Solutions

Bob,

We met this afternoon with GPPS, the entity that won the RFP from the State for us to buy energy from chicken litter. Many questions arose, but one in particular that Ashley and I would appreciate if your folks could answer for us.

We understand GPPS plans on seeking permitting as a boiler rather than as an incinerator. If so, would a non-waste determination request need to be submitted for the poultry litter feedstock? What experience does MDE have in dealing with these requests? What would be the timing for such a request?

Thanks for your help on this one Bob.

Abby

Abigail Ross Hopper, Esq.
Director, Maryland Energy Administration and
Energy Advisor to Governor Martin O'Malley
Annapolis, MD 21401
410-260-7655 (office)
410-940-9071 (cell)
abigail.hopper@maryland.gov Note new email address!

—

George (Tad) S. Aburn, Jr., Director
MDE-Air & Radiation Management Administration
1800 Washington Boulevard
Baltimore MD 21230
410-537-3255 (phone)
410-537-3391 (fax)
george.aburn@maryland.gov (email)

3/28

Karen Irons -MDE- <karen.iron@maryland.gov>



Fwd: Permitting Meeting

1 MESSAGE

Angelo Bianca -MDE- <angelo.bianca@maryland.gov>

Mon, Mar 10, 2014 at 5:24 PM

To: Karen Irons -MDE- <karen.iron@maryland.gov>

I am going. Are you available?

Sent from my iPhone

Begin forwarded message:

From: Cindy Szczesniak -MEA- <cindy.szczesniak@maryland.gov>

Date: March 10, 2014, 4:18:27 PM EDT

To: "Coleman R. Cassel II, Ph.D Founder & President of Strategic Development" <coleman@greenplanetpowersolutions.com>, "Lane, Sarah" <SWeammert@dnr.state.md.us>, Pat McMillan -MDA- <Pat.McMillan@maryland.gov>, Heather Barthel -MDE- <heather.barthel@maryland.gov>, Ashley Valis -GOV- <ashley.valis@maryland.gov>, kmosier@psc.state.md.us, "Sherwell, John" <jsherwell@dnr.state.md.us>, Angelo Bianca -MDE- <angelo.bianca@maryland.gov>, Kathy Kinsey -MDE- <kathy.kinsey@maryland.gov>

Subject: Fwd: Permitting Meeting

Good afternoon,

Just wondering if this date and time work?

Friday, March 28th at 1 pm

Please let me know.

Thank you,



 Follow us on Twitter!

Cindy Szczesniak

(410) 260-7176 / Cindy.Szczesniak@Maryland.gov

Maryland Energy Administration

Office: (410) 260-7655 / Fax: (410) 974-2250

60 West Street, Suite 300, Annapolis, MD 21401

CONFIDENTIALITY NOTE: This e-mail and any attachments transmitted with it may contain privileged, confidential, copyrighted, or other legally protected information and is intended solely for the use of the individual or entity to which the information is addressed. If you are the intended recipient, delivery of this message is not a waiver of any such privilege or right that may apply. If you are not the intended recipient, you may not use, copy, or disseminate the information. Please notify the sender immediately by e-mail if you have received this e-mail in error and delete this e-mail from your system.

----- Forwarded message -----

From: Abigail Hopper -GOV- <abigail.hopper@maryland.gov>

Date: Sun, Mar 9, 2014 at 9:34 PM

Subject: Fwd: Permitting Meeting

To: Cindy Szczesniak -MEA- <cindy.szczesniak@maryland.gov>

DNR

Sent from my iPad

Begin forwarded message:

From: "Goshorn, David" <DGOSHORN@dnr.state.md.us>
Date: March 7, 2014 at 4:05:36 PM EST
To: 'Abigail Hopper -GOV-' <abigail.hopper@maryland.gov>
Cc: "Gill, Joe" <JGill@dnr.state.md.us>, "Lane, Sarah" <SWeammert@dnr.state.md.us>
Subject: FW: Permitting Meeting

Hi Abby,

Sarah Lane will attend this meeting on DNR's behalf. Sarah is our guru on chicken litter to energy stuff. Please include her in any future emails regarding dates, information, etc.

Thanks!

Dave

David M. Goshorn, Ph.D.

Assistant Secretary - Aquatic Resources

Maryland Department of Natural Resources

580 Taylor Ave., C-4

Annapolis, Maryland 21401

Phone: (410) 260-8110

Cell: (410) 349-6561

Fax: (410) 260-8111

Email: dgoshom@dnr.state.md.us

From: Gill, Joe
Sent: Wednesday, March 05, 2014 1:08 PM
To: Conn, Christine; Michael, Bruce
Cc: Goshorn, David
Subject: FW: Permitting Meeting

From: Abigail Hopper -GOV- [<mailto:abigail.hopper@maryland.gov>]
Sent: Tuesday, March 04, 2014 6:48 PM
To: Coleman R. Cassel II PhD; Dunbar, Pete; Gill, Joe; Robert Summers -MDE-; Pat McMillan (MDA); Fred Hoover -MEA-; Kevin Hughes
Cc: Ashley Valis (GOV)
Subject: Permitting Meeting

Hi all,

I would like to schedule a meeting with all of the agencies involved in permitting the Green Planet Power Solutions project (they won the RFP to do the chicken litter to energy project) in advance of them submitting any applications. I met with many of your staff about this a few months ago, but wanted to get it on your radar as well.

So, could you please forward this to the appropriate staff person and have them coordinate with Cindy to set a meeting date. I would like to do this the last week in March.

Also-Coleman, please send along the list of anticipated permits in advance of the meeting.

Thanks,

Abby

Abigail Ross Hopper, Esq.

Director, Maryland Energy Administration and

Energy Advisor to Governor Martin O'Malley

Annapolis, MD 21401

[410-260-7655](tel:410-260-7655) (office)

[410-940-9071](tel:410-940-9071) (cell)

abigail.hopper@maryland.gov **Note new email address!**



Karen Irons -MDE- <karen.iron@maryland.gov>

Fwd: FW: File - NHSM_Determination_PPUSA.pdf

1 message

Angelo Bianca -MDE- <angelo.bianca@maryland.gov>

Mon, May 5, 2014 at 12:08 PM

To: Karen Irons -MDE- <karen.iron@maryland.gov>

FYI

——— Forwarded message ———

From: **Mark Schroeder** <mark.schroeder@castlebridgegrp.com>

Date: Wed, Apr 23, 2014 at 2:17 PM

Subject: FW: File - NHSM_Determination_PPUSA.pdf

To: "Angelo Bianca -MDE- (angelo.bianca@maryland.gov)" <angelo.bianca@maryland.gov>

Angelo,

Here's another EPA determination letter that we obtained. We are using the same process as outlined in this letter, so I think we have enough to set up the meeting with Gary Gross. Would you have the time to attend the meeting with me and if so, what days would be best for you?

Mark

——Original Message——

From: Coleman R. Cassel II, Ph.D Founder & President of Strategic Development [mailto:coleman@greenplanetpowersolutions.com]

Sent: Tuesday, April 22, 2014 5:42 PM

To: Mark Schroeder

Subject: FW: File - NHSM_Determination_PPUSA.pdf

Coleman R. Cassel II, Ph.D
Founder & President of Strategic Development
530.277.1769 CELL
www.GreenPlanetPowerSolutions.com

 Think Green. Before printing this e-mail, is it necessary?

——Original Message——

From: Michael Murphy [mailto:mike@dwelghtly.com]

Sent: Monday, April 14, 2014 7:06 PM

To: Ph.D Founder & President of Strategic Development Coleman R. Cassel

Subject: File - NHSM_Determination_PPUSA.pdf

Hi Coleman,

Here is a complete EPA poultry litter NHSM approval letter for another NC biomass project. Not sure if you're seen it before.

Mike

 **NHSM_Determination_PPUSA.pdf**
528K



Karen Irons -MDE- <karen.iron@maryland.gov>

Fwd: Green Planet

1 message

Angelo Bianca -MDE- <angelo.bianca@maryland.gov>
To: Karen Irons -MDE- <karen.iron@maryland.gov>

Mon, May 5, 2014 at 12:10 PM

This contains the WEB link that has the NC letter you mentioned.

----- Forwarded message -----

From: **Mark Schroeder** <mark.schroeder@castlebridgegrp.com>
Date: Mon, Mar 31, 2014 at 1:11 PM
Subject: RE: Green Planet
To: Angelo Bianca -MDE- <angelo.bianca@maryland.gov>
Cc: Abigail Hopper -GOV- <abigail.hopper@maryland.gov>

Angelo,

Thanks so much for the information. I have reviewed the documents you gave me on Friday and will share the same with Coleman. After we are a little further with the engineering solution, I would love to meet with you and the team at MDE. I'll be back with you shortly with some possible dates.

Mark

From: Angelo Bianca -MDE- [mailto:angelo.bianca@maryland.gov]
Sent: Monday, March 31, 2014 12:59 PM
To: Mark Schroeder
Cc: Abigail Hopper -GOV-
Subject: Green Planet

Mark,

To follow up on Friday's meeting, I am sending you some info on the EPA fuel legitimacy determination (that the use of poultry litter at the proposed facility will not be a solid waste, so as to avoid being deemed an incinerator). You should contact Gary Gross at EPA, Region III, to start the process of getting poultry litter approved as a legitimate fuel and not a waste. I left with you Friday an EPA, Region IV, determination for a project involving the use of poultry litter from young turkeys last year for a project in North Carolina. You can see EPA's letter and other info (including Gary's contact info) by clicking the link below.

<http://www.epa.gov/wastes/nonhaz/define/index.htm>

Hope this is helpful. Any questions, call me at 410-537-3260.

Also, Green Planet should come in and discuss the air permit application review process as soon as possible. A pre-application meeting would serve everyone well, as we have found that it helps the applicant prepare a better application, which helps our formal technical review and public review go more smoothly.

Finally, you may want to confirm with the PSC that the waiver that was secured for the project that is no longer to be built is still valid for the project that is now to be built by a different entity. Just a precaution so there are no surprises down the road.

Angelo



Karen Irons -MDE- <karen.iron@maryland.gov>

Green Planet

1 message

Mark Schroeder <mark.schroeder@castlebridgegrp.com>

Wed, May 7, 2014 at 4:41 PM

To: "gross.gary@epa.gov" <gross.gary@epa.gov>

Cc: "Karen Irons -MDE- (karen.iron@maryland.gov)" <karen.iron@maryland.gov>

Gary,

Thanks again for taking the time to meet with Karen and I today. As promised, attached is the draft letter we presented to you. We look forward to your comments.

Mark

 **NHSM_Determination_GPPS Draft v4.docx**
117K

SUBJECT: Applicability Determination No. 2131
Poultry Power USA
NHSM Determination

FROM: ?

TO: ?

Dear ?

Green Planet Power Solutions (GPPS) is proposing to burn used poultry litter as a fuel in a new boiler. The boiler will be used to generate steam for the production of electricity.

Based upon detailed review of Title 40, Part 241 of the Code of Federal Regulations (40 CFR Part 241) GPPS believes poultry litter to be a non-hazardous secondary material (NHSM) within the meaning of Title 40, Part 241 of the Code of Federal Regulations (40 CFR Part 241). The used poultry litter will be processed by GPPS. GPPS is requesting the EPA to make the determination that used litter meets the legitimacy criteria provided in 40 CFR §241.3. and the combustion of this material would not be subject to the requirements of the Commercial and Industrial Solid Waste Incineration (CISWI) emission standard, as specified in the Federal rules defining NHSM, and 40 CFR Part 60, Subpart CCCC.

Background

On February 7, 2013 the EPA published revisions to the CISWI regulations and the Solid Wastes Uses as Fuels or Ingredients in Combustion Units rule (also known as the NHSM rule).¹ The CISWI rule (for new units) will become effective on August 7, 2013. It includes a definition of "contained gaseous material" and indicates that the definition of solid waste given in 40 CFR §258.2 is to be used to determine if a material is a solid waste.

¹ 78 Fed. Reg 9112 (2013)

The NHSM rule still states that "non-hazardous secondary materials that are combusted are solid wastes," unless they can be exempted under either 40 CFR §241.3(b) or through a petition to the US EPA under 40 CFR §241.3(c). The EPA's interpretation makes it clear that to be subject to the CISWI rule a unit must burn a "solid waste" as that term is defined at 40 CFR §258.2 *and* does not qualify for one of the NHSM exemptions at 40 CFR §241.3. If the material is not a solid waste as defined in 40 CFR §258.2, its combustion is not subject to CISWI. Alternatively, the combustion of a solid waste can be exempt from CISWI if the conditions under 40 CFR Part 241 can be met.

Whether a material is a solid waste depends on whether 40 CFR §258.2 or the NHSM rule is being relied upon. Recent memoranda from Maryland and North Carolina are instructive in both contexts. Specifically, the NC DOJ memorandum of September 28, 2009 described ten factors that define whether a material is a solid waste under 40 CFR §258.2. Alternatively, the NC DOJ memorandum of July 20, 2011 defines whether a material is a solid waste in the context of the NHSM rule, and lists five factors that should be considered when making the determination under three subparts of that rule.² Maryland's Renewable Energy Portfolio Standard Program designates chicken litter as a Tier one renewable energy source not a solid waste.²

Project as Described

GPPS is developing a project to construct a new boiler fueled by processed used poultry litter. The project is being developed in response to the Renewable Energy and Energy Efficiency Portfolio Standards (REPS) adopted by the Maryland State Legislature in 2011. Under the REPS, Maryland intends to generate 20% of her energy from Tier I renewable sources by 2022. Biomass, including chicken litter falls within the Maryland Tier I REPS. Maryland issued a Request for Proposals (RFP) calling for the construction and operation of a Biomass power plant to generate electricity, using chicken litter as the primary fuel source. Dubbed the Clean Bay Power Project, GPPS submitted a proposal and subsequently won the award.

Once operational, the GPPS plant will generate approximately 13.4MW of electricity to the grid, which will be sold to the State of Maryland via a twenty (20) year power purchase agreement. As part of the project, GPPS plans to install a new boiler, emissions control equipment, and fuel handling, storage and processing equipment. GPPS is currently preparing its air permit application for submission to the Maryland Department of Environment. The purpose of this letter and analysis is to evaluate the proposed use of used poultry litter as fuel.

GPPS will produce the fuel by gathering used poultry litter from nearby poultry houses and processing it into a non-solid waste fuel. Based on the description of the process, and the chemical analysis of the material, NC DAQ determines that the processed used poultry litter meets the legitimacy criteria in 40 CFR § 241.3(d)(1) and is a non-solid waste fuel pursuant to 40 CFR § 241.3(b)(4).

² These subparts were given as,

- (1) Traditional fuels and clean cellulosic biomass (40 CFR §241.2),
- (2) Fuels or ingredient products used in a combustion unit that are made from discarded materials (40 CFR §241.3(b)(4)), and
- (3) Scrap tires and dewatered pulp and paper sludges (40 CFR §241.4(a)(1), and (4))

³ Maryland Annotated Code, Public Utilities Article, §§ 7-701 to 7-713 & MD Regulations, Title 20, Subtitle 61.

Analysis under 40 CFR Part 241

The NHSM definitional rule defines "processing" in 40 CFR § 241.2 as:

...any operations that transform discarded non-hazardous secondary material into a non-waste fuel or non-waste ingredient product. Processing includes, but is not limited to, operations necessary to: Remove or destroy contaminants; significantly improve the fuel characteristics of the material, e.g., sizing or drying the material in combination with other operations; chemically improve the as-fired energy content; or improve the ingredient characteristics. Minimal operations that result only in modifying the size or the material by shredding do not constitute processing for the purposes of this definition.

GPPS will collect used poultry litter generated from poultry farms and grow houses that are owned and operated by poultry growers in the State of Maryland. The poultry litter will come from five Maryland counties located on the lower Delmarva Peninsula. These five Maryland counties represent approximately 55% of the total used litter production on the Delmarva Peninsula. GPPS will collect approximately 170,000 tons of chicken litter annually. Of the 170,000 tons, 20% of the poultry litter will be held as backup fuel. The remainder will be processed and burned within one week of delivery to the site. The fuel will be stored in large covered structures with concrete walls and floors. GPPS will prepare the used poultry litter to improve the fuel combustion properties of the used poultry litter to produce an engineered, non-solid waste fuel as follows:

- **Material Assessment & Contaminant Removal.** GPPS personnel will visually observe each load of used poultry litter received and will physically remove observable foreign objects such as rocks and debris. The material will also be passed through a magnetic separation system to remove any ferrous metal constituents.
- **Moisture and Heat Content Testing.** GPPS will test the moisture content of each load and determine the approximate lower heating value (LHV) of the material as received.
- **Sampling and Contaminant Level Analysis.** GPPS will collect representative samples of the used poultry litter. Analysis will be performed on the to determine contaminant levels. The analysis will ensure the levels are comparable to those in traditional solid fuels, including coal and biomass.
- **Storage.** Following contaminant removal and sampling, the used poultry litter will be stored. Storage of the used poultry litter will be segregated by moisture content.
- **Screening and Sizing.** GPPS will screen the used poultry litter to produce material with the appropriate size, surface area, and density for efficient combustion in a boiler designed for solid fuel firing.
- **Blending.** The used poultry litter will be blended as needed to achieve the proper moisture and heat content for efficient combustion.

The steps listed above, including the removal of metal contaminants, sampling, testing, analysis, blending, and enhancement of *fuel* characteristics including size, surface area, density, and moisture content, transform the used poultry litter into a non-solid waste fuel.⁴

⁴. See Letter from Becky Weber, Director, Air and Waste Mgmt. Div., U.S. EPA, Region 7, to Mr. Gregory Haug, P.E., Resource Enterprises, LLC, (Apr. 3, 2012), available at <http://www.epa.gov/osw/nonhaz/define/pdfs/Lhoist-engineered-fuels.pdf>

I. Legitimacy Criteria

Under 40 CFR § 241.3, a NHSM that is burned is a solid waste unless it can meet the criteria listed in 40 CFR §241.3(b) or 40 CFR §241.4(a). For the particular NHSM of processed used poultry litter the legitimacy criteria are given in 40 CFR §241.3(d)(1) and state that the NHSM must: (a) be managed as a valuable commodity; (b) have meaningful heat content and be used as a fuel in a combustion unit with energy recovery; and (c) contain contaminants or groups of contaminants at levels comparable in concentration to or lower than those in traditional fuels which the combustion unit is designed to burn. The used poultry litter that GPPS proposes to burn meets each of these three criteria as detailed below.

a. Managed as a Valuable Commodity-40CFR241.3(d)(1)(i)

NHSMs that are managed as a valuable commodity must not be stored for a period that exceeds reasonable time frames and must be managed in a manner that is consistent with analogous fuels (or otherwise adequately contained to prevent releases to the environment). GPPS will store the used poultry litter in an enclosed building for a period not to exceed 90 days prior to burning the material as a fuel. GPPS anticipates that processed fuel will typically be stored for approximately four to seven days prior to use in the energy system. The purpose of maintaining the used poultry litter in an enclosed building is to prevent loss of the material to the environment, manage odors from the material, and limit moisture content in the fuel. The storage operations are consistent with typical management of wood chips and other biomass fuels.

b. Meaningful Heating Value -40 CFR 241.3(d)(1)(ii)

In the preamble to the final NHSM definitional rule, the EPA indicated that materials with heat contents of less than 5,000 British thermal units per pound (Btu/lb.) contain meaningful heat "if the energy recovery unit can cost-effectively recover meaningful energy from the NHSM used as fuel."⁵ Factors that may be considered include "whether the facility encounters a cost savings due to not having to purchase significant amounts of traditional fuels they otherwise would need, whether they are purchasing the non-hazardous secondary materials to use as a fuel, whether the non-hazardous secondary materials they are combusting can self-sustain combustion, and whether their operation produces energy that is sold for a profit. ..."⁶

GPPS analyzed the heat content of used poultry litter samples collected from poultry houses on the Delmarva Peninsula. GPPS proposes to burn used poultry litter from these and other similarly situated poultry farms. The used poultry litter that was sampled and tested is expected to be representative of the used poultry litter that GPPS proposes to burn. The winter heating value (as received with average moisture content of 29.4%) of the sampled material ranges between 2,750 and 5,790 Btu/lb. The average winter heating value (as received wet basis) is 4,390 Btu/lb. The summer heating value of the used poultry litter (as received with average moisture content of 27.4%) is between 3,350 Btu/lb. and 5,770 Btu/lb. The average summer heating value (as received wet basis) is 4,637 Btu/lb. Average winter and summer bone-dry heating values range between 6,236 Btu/lb. and 6,400 Btu/lb. respectively. As a basis of comparison, the higher heating value of green wood chips (as received) on a wet basis is 4,300 Btu/lb.

⁵ 76 Fed. Reg. 15,541 (Mar. 11, 2011).

⁶ 76 Fed. Reg. 15,523 (Mar. 11, 2011).

GPSS proposes to burn the processed used poultry litter in an Andritz designed and built "Ecofluid AC" fluidized bubbling bed boiler energy system that will be self-sustaining and able to fire the used poultry litter without the addition of supplemental fuels after startup. The energy system will cost-effectively recover meaningful energy from the used poultry litter, which will be sold at a profit. Because the used poultry litter will be burned in a self-sustaining combustion system to recover energy that will be sold for a profit, the material has meaningful heating value and meets the legitimacy criterion under 40 CFR 241.3(d)(1)(ii).

b. Comparable Contaminant Concentrations -40 CFR 241.3(d)(1)(iii)

For an NHSM to be classified as a non-solid waste fuel, it must "contain contaminants or groups of contaminants at levels comparable in concentration to or lower than those in traditional fuel(s) which the combustion unit is designed to burn."⁷ The US EPA issued a Comparable Contaminant Guidance Concept Paper indicating its intent to "address questions raised by industry, assist them in making determinations under the rule, and ensure their use of the flexibility embodied in the rule."⁸ The guidance was provided on November 29, 2011, including tables that provide both a range and an average of compiled contaminant concentrations for coal, untreated wood and biomass materials, and fuel oils.⁹ It is US EPA's stated intent that contaminant levels should be compared in such a manner that traditional fuel samples could not be "considered solid waste if burned in the very combustion units designed to burn them."¹⁰ Further clarification was provided in the February 7, 2013 rule noting "when comparing contaminant levels between NHSMs and traditional fuels, persons are not limited to comparing average concentrations. Traditional fuel contaminant levels can vary considerably and the full range of contaminant values may be used."¹¹ It is important to note that the traditional fuel used in the comparison need not be the traditional fuel the applicant will burn or is even permitted to burn. The only requirement is that the unit is designed to burn the traditional fuel used in the comparison.¹² This means that the unit will be subject to emission standards different, and possibly less stringent than those that would be required had the unit been permitted to burn the traditional fuel used in the comparison. The EPA also clarified somewhat what the method of comparison used should measure. To avoid a metric comparison that would possibly define a traditional fuel itself as not meeting the legitimacy criteria, applicants should use the entire range of contaminant values of traditional fuels to compare with values in the NHSM. However, the comparison must also recognize the variability of contaminant values in the NHSM. That is, "the full range of traditional fuel contaminant values can only be used if persons also consider some measure of variability in the NHSM contaminant data."¹² It is not clear, unfortunately, whether the EPA believes that the maximum stated values provided for traditional fuels are the actual maximum values or not. Alternatively, the EPA would recognize the variability of

⁷ 40 CFR 241.3(d)(1)(iii).

⁸ US EPA, "Non-Hazardous Secondary Materials (NHSM) Rule: Comparable Contaminant Guidance Concept Paper" (July 11, 2011), available at <http://www.epa.gov/osw/nonhaz/define/pdfs/nhsm-concept.pdf>.

⁹ US EPA, "Contaminant concentrations in Traditional Fuels: Tables for Comparison" (November 29, 2011), available at http://www.epa.gov/osw/nonhaz/define/pdfs/nhsm_cont_tf.pdf.

¹⁰ 76 Fed. Reg. 80841 (Dec. 23, 2011). See also Letter from Donald R. van der Vaart, Chief, Permit Section, NC Div. Air Quality, P. 5 (May 14, 2013), available at [Determination Letter NC DAQ To Costal Carolina Clean Power](#) to 78 FR 9112 at 9144. (Feb. 7, 2013).

¹² Id. at 9145.

¹³ Id. at 9152.

contaminant levels in the traditional fuels. The EPA has also approved the processing of mixed NHSM streams in which the average contaminant level of the mixture is used in the comparison rather than comparing the contaminant levels in each NHSM material stream contributing to the ultimate processed fuel. US EPA used this approach because the concentrations of the individual NHSM material streams were "not reflective of the concentration . . . in the engineered fuel products." Later the EPA affirmed that the processed mixture would be sampled and tested to confirm legitimacy. This indicates that materials may be blended in order to reduce their contaminant levels to below the traditional fuel levels. This would be distinguished from the prohibition of this method for the definition of hazardous waste (so-called "Mixture Rule"). GPPS is similarly proposing to produce a non-solid waste fuel by collecting multiple streams of used poultry litter collected from different poultry houses in five various Maryland counties on the Delmarva Peninsula. The NHSM streams will then be processed to produce the final fuel product. The NC Division of Air Quality (NC DAQ) did not use the US EPA approach for the contaminant concentration analysis, but rather looked at the variability of contaminant concentrations in sampled used poultry litter streams, and compared the upper prediction limits (UPLs) to the high end of the traditional fuel levels.

The EPA has made clear that no single statistical method or test should be defined in this regard.¹⁴ In one instance the EPA responded to a commenter who compared the 99% UPL of chlorine in pulp and paper sludge with "chlorine concentrations observed in coal."¹⁵ In a subsequent discussion, the EPA offered as an example method that met their approval the comparison of the 90% predicted level of the contaminant in the NHSM with the maximum value in the traditional fuel.¹⁶ Therefore, the US EPA has condoned comparing of UPLs against the maximum traditional fuel levels based on either a 99% or 90% confidence level. It is not clear whether US EPA would condone the use of a UPL based on a confidence level below 90% in this regard. GPPS is proposing to install and operate an energy system that is designed to burn solid fuel, including but not limited to all coal ranks (*i.e.*, anthracite, bituminous, sub-bituminous, and lignite), wood chips, timber, bark, and other biomass. The predicted contaminant levels of the processed fuel were compared to the following contaminant levels in coal, wood, and other biomass materials:

- **Metals:** Antimony, Arsenic, Beryllium, Cadmium, Chromium, Cobalt, Lead, Manganese, Mercury, Nickel, Selenium
- **Total Halogens** (including chlorine and fluorine)
- **Additional Precursors:** Nitrogen, Sulfur

¹⁴ "The agency disagrees that any one statistical tool or comparison methodology will fit every situation given the variety of NHSMs, traditional fuels, contaminants and combustion units that exist." 78 Fed. Reg. 9112 at 9168.

¹⁵ *Id.* at 9145.

¹⁶ *Id.* at 9153.

Results of Comparison

There are long established statistical tests to determine whether two materials are statistically different based on samples from both material populations. However, the US EPA is simply interested in not designating a candidate NHSM as solid waste if doing so based on its contaminant level would *ever* also define the traditional fuel as a solid waste as well.¹⁷ To this end, the US EPA has indicated that a variety of comparisons could be made. For example, the highest contaminant levels in the NHSM could be compared against the highest contaminant levels in the relevant traditional fuels.

Alternatively, the average values of the NHSM could be compared with the average values of the traditional fuels. "Anything less could result in 'traditional fuel' samples being considered solid waste if burned in the very combustion units designed to burn them – not the Agency's intent in either the 2011 NHSM final rule or today's proposed rule."¹⁸ However, using different bases for comparison could lead to different results. The US EPA warned that "[i]t would not be appropriate to compare an average NHSM contaminant value to the high end of a traditional fuel range, as the existence of an average implies multiple data points from which a more suitable statistic (*e.g.*, range or standard deviation) could have been calculated." Finally, the EPA warned, "in the context of an inspection or enforcement action, the Agency will evaluate the appropriateness of alternative methodologies and data sources on a case-by-case basis when determining whether the legitimacy criteria have been met."¹⁹

In this case, each predicted contaminant concentration of the processed used poultry litter is comparable to the contaminant concentrations in coal or wood. For total halogen content, the NC DAQ calculated the UPL for various confidence intervals for the total halogen content in poultry litter on an as-fired basis. Total halogens in used poultry litter, is predominately comprised of chlorine.

UPL Confidence Level	Total Halogens, ppm at 28% moisture by weight
90	8,275
95	8,870
99	10,093

According to EPA responses to comments, these values should be compared with the maximum observed total halogen content for coal on an as-fired basis, which is 8,610 ppm at 7% moisture by weight.²⁰ The UPL of total halogens in used poultry litter based on a 90% confidence level is below the maximum concentration of total halogens in coal. Therefore, the total halogen concentration in used poultry litter is comparable to coal, and the material is not a solid waste. Since the poultry litter satisfies this criterion under 40 CFR §241.3 there is no reason to consider used poultry litter under the definition of solid waste under 40 CFR §258.2.

¹⁷ Indeed, the EPA points out in its proposed rule that, for example, the coals used in a comparison need not be limited to the coal received from either the current or past suppliers. Of course, in cases where the unit is not permitted to burn coal, but is designed to burn coal, any coal rank can be considered including anthracite, lignite, bituminous, and sub-bituminous. 76 Fed. Reg. 80477 (Dec.23, 2011).

¹⁸ 76 Fed. Reg. 80841 (Dec. 23, 2011).

¹⁹ 76 Fed. Reg. 80482-3. (Dec. 23, 2011).

²⁰ Note that the EPA approved the comparison of the UPL of the NHSM with the maximum value for the traditional fuel rather than with the UPL of the traditional fuel.



Karen Irons -MDE- <karen.iron@maryland.gov>

Fwd: FW: Green Planet

1 message

Karen Irons -MDE- <karen.iron@maryland.gov>
To: Angelo Bianca -MDE- <angelo.bianca@maryland.gov>

Wed, May 14, 2014 at 9:33 AM

fyi

Karen Irons, Manager
Air Quality Permits Program
Maryland Department of Environment
410-537-3256

----- Forwarded message -----

From: Gross, Gary <Gross.Gary@epa.gov>
Date: Wed, May 14, 2014 at 9:32 AM
Subject: FW: Green Planet
To: "Gordon, Michael" <Gordon.Mike@epa.gov>, "karen.iron@maryland.gov" <karen.iron@maryland.gov>

Karen & Mike--FYI

From: Gross, Gary
Sent: Wednesday, May 14, 2014 9:30 AM
To: 'Mark Schroeder'
Subject: RE: Green Planet

Mr. Schroeder—

I have reviewed your draft request for clarification regarding your solid waste determination for Green Planet Power Solution's proposed poultry litter powered electric generating station. A marked-up version incorporating most of my comments using Word's 'track changes' option is attached. I also have several more general comments/recommendations:

1. Describe EPA regulations/guidance/policies only insofar as necessary to provide context. The goal of your letter should be to provide the specific, technical details about the project that support your non-waste determination, not a general analysis of the NHSM rule (that's my job).
2. Do not use the NC DENR letter as a template. I do not know the specific context in which it was written, but it is not an EPA precedent and, in some cases, cites criteria that are clearly not relevant to EPA determinations. Although it is not as directly comparable to GPPS's facility, the Wellons letter (and other response letters on EPA's website) provide a more appropriate template.
3. As discussed in our meeting, I recommend that you describe all of the 'green' aspects of the facility as part of the Background discussion. This would, of course, include the fact that alternatives to land application reduce the

nutrient load to the Chesapeake Bay and its estuaries.

4. Recommended outline:

Introduction/Background

Facility Description

Processing

Legitimacy Criteria

Manage as a valuable commodity

Meaningful heating value

Contaminant comparability

In particular, describe in detail aspects of the processing that transform a rather variable collection of wastes into a reasonably uniform fuel product.

I've proposed some changes to the language of the letter as a shorthand way to provide comments. This should not be construed as required language, nor should it be viewed as a thorough edit. In fact, I highly recommend that you do a complete edit of the letter after incorporating my substantive recommendations.

I presume you will have numerous questions as you go through these comments. Feel free to call me to discuss them.

Gary Gross

EPA Region 3

Land & Chemicals Division (3LC30)

215-814-3412

From: Mark Schroeder [mailto:mark.schroeder@castlebridgegrp.com]

Sent: Wednesday, May 07, 2014 4:41 PM

To: Gross, Gary

Cc: Karen Irons -MDE- (karen.irons@maryland.gov)

Subject: Green Planet

Gary,

Thanks again for taking the time to meet with Karen and I today. As promised, attached is the draft letter we presented to you. We look forward to your comments.

SUBJECT: ~~Applicability Determination No. 2131~~
~~Poultry Power USA~~
NHSM Determination

FROM: ?

TO: ?

Dear ?

Green Planet Power Solutions (GPPS) is proposing to burn used poultry litter as a fuel in a new boiler. The boiler will be used to generate steam for the production of electricity.

~~Based upon detailed review of Title 40, Part 241 of the Code of Federal Regulations (40 CFR Part 241), GPPS believes poultry litter to be a non-hazardous secondary material (NHSM) within the meaning of Title 40, Part 241 of the Code of Federal Regulations (40 CFR Part 241). The used poultry litter will be processed by GPPS. GPPS is requesting the EPA to make the determination that used litter meets the legitimacy criteria provided in 40 CFR §241.3 is not a solid waste when burned for energy recovery as described in this letter, and the combustion of this material would not be subject to the requirements of the Commercial and Industrial Solid Waste Incineration (CISWI) emission standard, as specified in the Federal rules defining NHSM, and 40 CFR Part 60, Subpart CCCC.~~

Background

On February 7, 2013 the EPA published revisions to the CISWI regulations and the Solid Wastes Used as Fuels or Ingredients in Combustion Units rule (also known as the NHSM rule).¹ The CISWI rule (for new units) will become effective on August 7, 2013. It includes a definition of "contained gaseous material" and indicates that the definition of solid waste given in 40 CFR §258.2 is to be used to determine if a material is a solid waste.

¹ 78 Fed. Reg 9112 (2013)

Formatted: Indent: Left: 0.11", Hanging: 0.99", Right: 3.38", Line spacing: Multiple 1.05 li, Tab stops: 1.1", Left

Comment [GG1]: Send to John A. Armstead, Director, Land & Chemicals Division (3LC00), EPA Region 3, 1650 Arch Street, Philadelphia, PA 19103 with copies to Diana Esher, Director, Air Protection Division (3AP00), EPA Region 3 and George Faison, Program Implementation and Information Division, Office of Resource Conservation and Recovery (5303P), Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington, DC 20460-0002 and ...ma

Comment [GG2]: As discussed in our meeting, EPA does not make the determination. You should request EPA confirmation of your determination.

Comment [GG3]: Legitimacy criteria are not the only considerations. Presumably you are also requesting EPA agreement that you are legitimately processing the litter.

Comment [GG4]: CISWI applicability determinations are made by MDE in consultation with EPA's Air Program. Your request here should be limited to seeking agreement that your processed poultry litter is not a solid waste when burned as a fuel.

Comment [GG5]: Provide background on the project, not the regulations.

The NHSM rule still states that "non-hazardous secondary materials that are combusted are solid wastes," unless they can be exempted under either 40 CFR §241.3(b) or through a petition to the US EPA under 40 CFR §241.3(c). The EPA's interpretation makes it clear that to be subject to the CISWI rule a unit must burn a "solid waste" as that term is defined at 40 CFR §258.2 and does not qualify for one of the NHSM exemptions at 40 CFR §241.3. If the material is not a solid waste as defined in 40 CFR §258.2, its combustion is not subject to CISWI. Alternatively, the combustion of a solid waste can be exempt from CISWI if the conditions under 40 CFR Part 241 can be met.

Whether a material is a solid waste depends on whether 40 CFR §258.2 or the NHSM rule is being relied upon. Recent memoranda from Maryland and North Carolina are instructive in both contexts. Specifically, the NC DOJ memorandum of September 28, 2009 described ten factors that define whether a material is a solid waste under 40 CFR §258.2. Alternatively, the NC DOJ memorandum of July 20, 2011 defines whether a material is a solid waste in the context of the NHSM rule, and lists five factors that should be considered when making the determination under three subparts of that rule.² Maryland's Renewable Energy Portfolio Standard Program designates chicken litter as a Tier one renewable energy source not a solid waste.³

Project as Described

GPPS is developing a project to construct a new boiler fueled by processed used poultry litter. The project is being developed in response to the Renewable Energy and Energy Efficiency Portfolio Standards (REPS) adopted by the Maryland State Legislature in 2011. Under the REPS, Maryland intends to generate 20% of her energy from Tier I renewable sources by 2022. Biomass, including chicken litter falls within the Maryland Tier 1 REPS. Maryland issued a Request for Proposals (RFP) calling for the construction and operation of a Biomass power plant to generate electricity, using chicken litter as the primary fuel source. Dubbed the Clean Bay Power Project, GPPS submitted a proposal and subsequently won the award.

Once operational, the GPPS plant will generate approximately 13.4MW of electricity to the grid, which will be sold to the State of Maryland via a twenty (20) year power purchase agreement. As part of the project, GPPS plans to install a new boiler, emissions control equipment, and fuel handling, storage and processing equipment. GPPS is currently preparing its air permit application for submission to the Maryland Department of Environment. The purpose of this letter and analysis is to evaluate the proposed use of used poultry litter as fuel summarize GPPS's rationale for determining that poultry litter is not considered a solid waste when burned in its boiler.

GPPS will produce the fuel by gathering used poultry litter from nearby poultry houses and processing it into a non-solid waste fuel. Based on the description of the process, and the chemical analysis of the material, NC DAQ determines that the processed used poultry litter meets the legitimacy criteria in 40 CFR § 241.3(d)(1) and is a non-solid waste fuel pursuant to 40 CFR § 241.3(b)(4).

² These subparts were given as,

- (1) Traditional fuels and clean cellulosic biomass (40 CFR §241.2),
- (2) Fuels or ingredient products used in a combustion unit that are made from discarded materials (40 CFR §241.3(b)(4)), and
- (3) Scrap tires and dewatered pulp and paper sludges (40 CFR §241.4(a)(1), and (4))

³ Maryland Annotated Code, Public Utilities Article, §§ 7-701 to 7-713 & MD Regulations, Title 20, Subtitle 61.

Comment [GG6]: All discussion of CISWI, contained gaseous material, and NC memoranda are not relevant here. Even Maryland's Tier One designation is not directly relevant, though it does provide some useful context in much the same way that describing the project's overall 'green' aspects does.

The relevant info is that 258.2 defines solid waste and Part 241 says that all secondary materials burned as a fuel or ingredient meet that definition for purposes of the Clean Air Act unless they meet one or more of the exclusion criteria.

It would suffice to simply say that 40 CFR 241 contains the procedures to follow to determine whether the litter is a solid waste when burned as a fuel. For burners like GPPS that are not under the control of the generator, the litter must be processed and it must meet the legitimacy criteria in order to be a non-waste.

Comment [GG7]: Provide basic information re: exact site location, property size, etc.

Comment [GG8]: Are there others, except for startup?

Comment [GG9]: This is not relevant to GPPS

I. Legitimacy Criteria

Under 40 CFR § 241.3, a NHSM that is burned is a solid waste unless it can meet the criteria listed in 40 CFR §241.3(b) or 40 CFR §241.4(a). For the particular NHSM of processed used poultry litter the legitimacy criteria are given in 40 CFR §241.3(d)(1) and state that the NHSM must: (a) be managed as a valuable commodity; (b) have meaningful heat content and be used as a fuel in a combustion unit with energy recovery; and (c) contain contaminants or groups of contaminants at levels comparable in concentration to or lower than those in traditional fuels which the combustion unit is designed to burn. The used poultry litter that GPPS proposes to burn meets each of these three criteria as detailed below.

a. Managed as a Valuable Commodity -40CFR 241.3(d)(1)(i)

NHSMs that are managed as a valuable commodity must not be stored for a period that exceeds reasonable time frames and must be managed in a manner that is consistent with analogous fuels (or otherwise adequately contained to prevent releases to the environment). GPPS will store the used poultry litter in an enclosed building for a period not to exceed 90 days prior to burning the material as a fuel. GPPS anticipates that processed fuel will typically be stored for approximately four to seven days prior to use in the energy system. The purpose of maintaining the used poultry litter in an enclosed building is to prevent loss of the material to the environment, manage odors from the material, and limit moisture content in the fuel. The storage operations are consistent with typical management of wood chips and other biomass fuels.

b. Meaningful Heating Value -40 CFR 241.3(d)(1)(ii)

In the preamble to the final NHSM definitional rule, the EPA indicated that materials with heat contents of less than 5,000 British thermal units per pound (Btu/lb.) contain meaningful heat "if the energy recovery unit can cost-effectively recover meaningful energy from the NHSM used as fuel."⁵ Factors that may be considered include "whether the facility encounters a cost savings due to not having to purchase significant amounts of traditional fuels they otherwise would need, whether they are purchasing the non-hazardous secondary materials to use as a fuel, whether the non-hazardous secondary materials they are combusting can self-sustain combustion, and whether their operation produces energy that is sold for a profit. ..."⁶

GPPS analyzed the heat content of used poultry litter samples collected from poultry houses on the Delmarva Peninsula. GPPS proposes to burn used poultry litter from these and other similarly situated poultry farms. The used poultry litter that was sampled and tested is expected to be representative of the used poultry litter that GPPS proposes to burn. The winter heating value (as received with average moisture content of 29.4%) of the sampled material ranges between 2,750 and 5,790 Btu/lb. The average winter heating value (as received wet basis) is 4,390 Btu/lb. The summer heating value of the used poultry litter (as received with average moisture content of 27.4%) is between 3,350 Btu/lb. and 5,770 Btu/lb. The average summer heating value (as received wet basis) is 4,637 Btu/lb. Average winter and summer bone-dry heating values range between 6,236 Btu/lb. and 6,400 Btu/lb. respectively. As a basis of comparison, the higher heating value of green wood chips (as received) on a wet basis is 4,300 Btu/lb.

Comment [GG18]: Provide the actual data.

⁵ 76 Fed. Reg. 15,541 (Mar. 11, 2011).

⁶ 76 Fed. Reg. 15,523 (Mar. 11, 2011).

Analysis under 40 CFR Part 241 Processing

The NHSM ~~definitional~~ rule defines "processing" in 40 CFR § 241.2 as:

...any operations that transform discarded non-hazardous secondary material into a non-waste fuel or non-waste ingredient product. Processing includes, but is not limited to, operations necessary to: Remove or destroy contaminants; significantly improve the fuel characteristics of the material, e.g., sizing or drying the material in combination with other operations; chemically improve the as-fired energy content; or improve the ingredient characteristics. Minimal operations that result only in modifying the size or the material by shredding do not constitute processing for the purposes of this definition.

GPPS will collect used poultry litter generated from poultry farms and grow houses that are owned and operated by poultry growers in the State of Maryland. The poultry litter will come from five Maryland counties located on the lower Delmarva Peninsula. These five Maryland counties represent approximately 55% of the total used litter production on the Delmarva Peninsula. GPPS will collect approximately 170,000 tons of chicken litter annually. Of the 170,000 tons, 20% of the poultry litter will be held as backup fuel. The remainder will be processed and burned within one week of delivery to the site. The fuel will be stored in large covered structures with concrete walls and floors. GPPS will ~~prepare the used poultry litter to improve the fuel combustion properties of process~~ the used poultry litter to produce an engineered, non-solid waste fuel as follows:

- Material Assessment & Contaminant Removal. GPPS personnel will visually observe each load of used poultry litter received and will physically remove observable foreign objects such as rocks and debris. The material will also be passed through a magnetic separation system to remove any ferrous metal constituents.
- Moisture and Heat Content Testing. GPPS will test the moisture content of each load and determine the approximate lower heating value (LHV) of the material as received.
- Sampling and Contaminant Level Analysis. GPPS will collect representative samples of the used poultry litter. Analysis will be performed to determine contaminant levels. The analysis will ensure the levels are comparable to those in traditional solid fuels, including coal and biomass.
- Storage. Following contaminant removal and sampling, the used poultry litter will be stored. Storage of the used poultry litter will be segregated by moisture content.
- Screening and Sizing. GPPS will screen the used poultry litter to produce material with the appropriate size, surface area, and density for efficient combustion in a boiler designed for solid fuel firing.
- Blending. The used poultry litter will be blended as needed to achieve the proper moisture and heat content for efficient combustion.

The steps listed above, including the removal of metal contaminants, sampling, testing, analysis, blending, and enhancement of fuel characteristics including size, surface area, density, and moisture content, transform the used poultry litter into a non-solid waste fuel.⁴

⁴ See Letter from Becky Weber, Director, Air and Waste Mgmt. Div., U.S. EPA, Region 7, to Mr. Gregory Haug, P.E., Resource Enterprises, LLC, (Apr. 3, 2012), available at <http://www.epa.gov/osw/nonhaz/define/pdfs/Lhost-engineered-fuels.pdf>

Comment [GG10]: Emphasize any steps that improve the fuel value (e.g. increase heating value or make HV consistent), reduce contaminant concentrations, or otherwise promote a consistent fuel product.

Comment [GG11]: This is background info unrelated to processing.

Comment [GG12]: This addresses the first legitimacy criterion, not processing.

Comment [GG13]: Describe in more detail a systematic process for this.

Comment [GG14]: What happens if the levels are not comparable? Analysis alone cannot ensure that contaminant levels are met. Describe a management system that does.

Comment [GG15]: Describe in more detail.

Comment [GG16]: What is the appropriate size, surface area, etc.? Legitimate processing should produce an as-fired fuel within a limited range for key parameters (e.g., heating value, moisture content, particle size, and constituent concentrations). The more the as-fired product adheres to a well-defined set of criteria, the more likely it is to be considered legitimate processing. What happens to litter that is rejected?

Comment [GG17]: Expand this to describe the criteria used to determine when to blend and the target characteristics

GPSS proposes to burn the processed used poultry litter in an Andritz designed and built "Ecofluid AC" fluidized bubbling bed boiler energy system that will be self-sustaining and able to fire the used poultry litter without the addition of supplemental fuels after startup. The energy system will cost-effectively recover meaningful energy from the used poultry litter, which will be sold at a profit. Because the used poultry litter will be burned in a self-sustaining combustion system to recover energy that will be sold for a profit, the material has meaningful heating value and meets the legitimacy criterion under 40 CFR 241.3(d)(1)(ii).

b. Comparable Contaminant Concentrations - 40 CFR 241.3(d)(1)(iii)

For an NHSM to be classified as a non-solid waste fuel, it must "contain contaminants or groups of contaminants at levels comparable in concentration to or lower than those in traditional fuel(s) which the combustion unit is designed to burn."⁷ The US EPA issued a Comparable Contaminant Guidance Concept Paper indicating its intent to "address questions raised by industry, assist them in making determinations under the rule, and ensure their use of the flexibility embodied in the rule."⁸ The guidance was provided on November 29, 2011, including tables that provide both a range and an average of compiled contaminant concentrations for coal, untreated wood and biomass materials, and fuel oils.⁹ It is US EPA's stated intent that contaminant levels should be compared in such a manner that traditional fuel samples could not be "considered solid waste if burned in the very combustion units designed to burn them."¹⁰ Further clarification was provided in the February 7, 2013 rule noting "when comparing contaminant levels between NHSMs and traditional fuels, persons are not limited to comparing average concentrations. Traditional fuel contaminant levels can vary considerably and the full range of contaminant values may be used."¹¹ It is important to note that the traditional fuel used in the comparison need not be the traditional fuel the applicant will burn or is even permitted to burn. The only requirement is that the unit is designed to burn the traditional fuel used in the comparison.¹² This means that the unit will be subject to emission standards different, and possibly less stringent than those that would be required had the unit been permitted to burn the traditional fuel used in the comparison. The EPA also clarified somewhat what the method of comparison used should measure. To avoid a metric comparison that would possibly define a traditional fuel itself as not meeting the legitimacy criteria, applicants should use the entire range of contaminant values of traditional fuels to compare with values in the NHSM. However, the comparison must also recognize the variability of contaminant values in the NHSM. That is, "the full range of traditional fuel contaminant values can only be used if persons also consider some measure of variability in the NHSM contaminant data."¹³ It is not clear, unfortunately, whether the EPA believes that the maximum stated values provided for traditional fuels are the actual maximum values or not. Alternatively, the EPA would recognize the variability of

Comment [GG19]: It seems unlikely that litter at the low end of the heating value range described above would burn effectively without supplemental fuel. Will litter be blended to a minimum as-fired heating value that is higher than the low-end as-received heating value? If so, describe that process in detail.

Comment [GG20]: Describe the energy recovery process(es) in more detail. Is electricity generated by traditional steam turbine? Describe any secondary heat recovery processes (e.g. space heat for greenhouses).

Comment [GG21]: The emission standards that ultimately apply are not relevant to the solid waste determination.

⁷ 40 CFR 241.3(d)(1)(iii).

⁸ US EPA, "Non-Hazardous Secondary Materials (NHSM) Rule. Comparable Contaminant Guidance Concept Paper" (July 11, 2011), available at <http://www.epa.gov/osw/nonhaz/define/pdfs/nhsm-concept.pdf>.

⁹ US EPA, "Contaminant concentrations in Traditional Fuels: Tables for Comparison" (November 29, 2011), available at http://www.epa.gov/osw/nonhaz/define/pdfs/nhsm_cont_tf.pdf.

¹⁰ 76 Fed. Reg. 80841 (Dec. 23, 2011). See also Letter from Donald R. van der Vaart, Chief, Permit Section, NC Div. Air Quality, P. 5 (May 14, 2013), available at [Determination Letter NC DAO To Coastal Carolina Clean Power](#) to 78 FR 9112 at 9144. (Feb. 7, 2013).

¹² Id. at 9145.

¹³ Id. at 9152.

contaminant levels in the traditional fuels. The EPA has also approved the processing of mixed NHSM streams in which the average contaminant level of the mixture is used in the comparison rather than comparing the contaminant levels in each NHSM material stream contributing to the ultimate processed fuel. US EPA used this approach because the concentrations of the individual NHSM material streams were "not reflective of the concentration . . . in the engineered fuel products." Later the EPA affirmed that the processed mixture would be sampled and tested to confirm legitimacy. This indicates that materials may be blended in order to reduce their contaminant levels to below the traditional fuel levels. This would be distinguished from the prohibition of this method for the definition of hazardous waste (so-called "Mixture Rule"). GPPS is similarly proposing to produce a non-solid waste fuel by collecting multiple streams of used poultry litter collected from different poultry houses in five various Maryland counties on the Delmarva Peninsula. The NHSM streams will then be processed to produce the final fuel product. The NC Division of Air Quality (NC DAQ) did not use the US EPA approach for the contaminant concentration analysis, but rather looked at the variability of contaminant concentrations in sampled used poultry litter streams, and compared the upper prediction limits (UPLs) to the high end of the traditional fuel levels.

The EPA has made clear that no single statistical method or test should be defined in this regard.¹⁴ In one instance the EPA responded to a commenter who compared the 99% UPL of chlorine in pulp and paper sludge with "chlorine concentrations observed in coal."¹⁵ In a subsequent discussion, the EPA offered as an example method that met their approval the comparison of the 90% predicted level of the contaminant in the NHSM with the maximum value in the traditional fuel.¹⁶ Therefore, the US EPA has condoned comparing of UPLs against the maximum traditional fuel levels based on either a 99% or 90% confidence level. It is not clear whether US EPA would condone the use of a UPL based on a confidence level below 90% in this regard. GPPS is proposing to install and operate an energy system that is designed to burn solid fuel, including but not limited to all coal ranks (*i.e.*, anthracite, bituminous, sub-bituminous, and lignite), wood chips, timber, bark, and other biomass. The predicted contaminant levels of the processed fuel were compared to the following contaminant levels in coal, wood, and other biomass materials:

- **Metals:** Antimony, Arsenic, Beryllium, Cadmium, Chromium, Cobalt, Lead, Manganese, Mercury, Nickel, Selenium
- **Total Halogens** (including chlorine and fluorine)
- **Additional Precursors:** Nitrogen, Sulfur

Comment [GG22]: Note that the NHSM definition of *contaminant* effectively includes all hazardous air pollutants (HAP). All of these need to be addressed in some way. I recommend that you provide quantitative comparison data for all contaminants included in the Wellons letter enclosure. A qualitative assessment may suffice for other HAPs, depending on knowledge of the nature of the poultry litter.

Comment [GG23]: Rather than a wide-ranging discussion of possible ways to compare contaminants, I recommend that you provide a succinct summary of the regulatory requirement and then present only the approach that GPPS intends to use. (Again the NC DEQ reference is irrelevant.)

¹⁴ "The agency disagrees that any one statistical tool or comparison methodology will fit every situation given the variety of NHSMs, traditional fuels, contaminants and combustion units that exist." 78 Fed. Reg. 9112 at 9168.

¹⁵ *Id.* at 9145.

¹⁶ *Id.* at 9153.

Results of Comparison

There are long established statistical tests to determine whether two materials are statistically different based on samples from both material populations. However, the US EPA is simply interested in not designating a candidate NHSM as solid waste if doing so based on its contaminant level would ever also define the traditional fuel as a solid waste as well.¹⁷ To this end, the US EPA has indicated that a variety of comparisons could be made. For example, the highest contaminant levels in the NHSM could be compared against the highest contaminant levels in the relevant traditional fuels.

Alternatively, the average values of the NHSM could be compared with the average values of the traditional fuels. "Anything less could result in 'traditional fuel' samples being considered solid waste if burned in the very combustion units designed to burn them – not the Agency's intent in either the 2011 NHSM final rule or today's proposed rule."¹⁸ However, using different bases for comparison could lead to different results. The US EPA warned that "[i]t would not be appropriate to compare an average NHSM contaminant value to the high end of a traditional fuel range, as the existence of an average implies multiple data points from which a more suitable statistic (e.g., range or standard deviation) could have been calculated." Finally, the EPA warned, "in the context of an inspection or enforcement action, the Agency will evaluate the appropriateness of alternative methodologies and data sources on a case-by-case basis when determining whether the legitimacy criteria have been met."¹⁹

In this case, each predicted contaminant concentration of the processed used poultry litter is comparable to the contaminant concentrations in coal or wood. For total halogen content, the NC DAQ calculated the UPL for various confidence intervals for the total halogen content in poultry litter on an as-fired basis. Total halogens in used poultry litter, is predominately comprised of chlorine.

UPL Confidence Level	Total Halogens, ppm at 28% moisture by weight
90	8,275
95	8,870
99	10,093

According to EPA responses to comments, these values should be compared with the maximum observed total halogen content for coal on an as-fired basis, which is 8,610 ppm at 7% moisture by weight.²⁰ The UPL of total halogens in used poultry litter based on a 90% confidence level is below the maximum concentration of total halogens in coal. Therefore, the total halogen concentration in used poultry litter is comparable to coal, and the material is not a solid waste. ~~Since the poultry litter satisfies this criterion under 40 CFR §241.3 there is no reason to consider used poultry litter under the definition of solid waste under 40 CFR §258.2.~~

¹⁷ Indeed, the EPA points out in its proposed rule that, for example, the coals used in a comparison need not be limited to the coal received from either the current or past suppliers. Of course, in cases where the unit is not permitted to burn coal, but is designed to burn coal, any coal rank can be considered including anthracite, lignite, bituminous, and sub-bituminous. 76 Fed. Reg. 80477 (Dec.23, 2011).

¹⁸ 76 Fed. Reg. 80841 (Dec. 23, 2011).

¹⁹ 76 Fed. Reg. 80482-3. (Dec. 23, 2011).

²⁰ Note that the EPA approved the comparison of the UPL of the NHSM with the maximum value for the traditional fuel rather than with the UPL of the traditional fuel.

Comment [GG24]: The first cut usually used for contaminant comparisons is showing that the concentration range for the NHSM (poultry litter in this case) is within the concentration range of the traditional fuel that is being used for comparison. If some constituents are outside of that range then additional analyses may be performed to show that the concentrations are still 'comparable.'

Comment [GG25]: Provide a tabular comparison for all constituents, not just chlorine. See EPA Wellons letter for example.

Comment [GG26]: EPA's published coal database summary indicates a maximum chlorine concentration of 9080 ppm in coal.

Comment [GG27]: The 241 regulations only determine whether it is a solid waste when burned and only for purposes of the Clean Air Act. It may be a solid waste under other management scenarios (e.g. transportation, storage)



Karen Irons -MDE- <karen.iron@maryland.gov>

Fwd: media inquiry, Green Planet Power Solutions (electricity from chicken litter)

1 message

Karen Irons -MDE- <karen.iron@maryland.gov>
To: Jay Apperson -MDE- <jay.apperson@maryland.gov>
Cc: Angelo Bianca -MDE- <angelo.bianca@maryland.gov>

Thu, Jul 10, 2014 at 11:34 AM

I sent email this morning to Mark Shroeder (who represents Green Planet) asking him status of application. I haven't heard back from him yet

Karen Irons, Manager
Air Quality Permits Program
Maryland Department of Environment
410-537-3256

----- Forwarded message -----

From: **Angelo Bianca -MDE- <angelo.bianca@maryland.gov>**
Date: Wed, Jul 9, 2014 at 10:37 PM
Subject: Re: media inquiry, Green Planet Power Solutions (electricity from chicken litter)
To: Jay Apperson -MDE- <jay.apperson@maryland.gov>
Cc: Karen Irons -MDE- <karen.iron@maryland.gov>, "samantha.kappalman@maryland.gov" <samantha.kappalman@maryland.gov>, George Aburn -MDE- <george.aburn@maryland.gov>, Kathy Kinsey -MDE- <kathy.kinsey@maryland.gov>, Jay Sakai -MDE- <jay.sakai@maryland.gov>, Virginia Kearney -MDE- <virginia.kearney@maryland.gov>, Horacio Tablada -MDE- <horacio.tablada@maryland.gov>, Hilary Miller -MDE- <hilary.miller@maryland.gov>

We were expecting an application by June 1st, according to a statement made by the company at a meeting a few months ago...nothing yet.

Sent from my iPhone

On Jul 9, 2014, at 4:46 PM, Jay Apperson -MDE- <jay.apperson@maryland.gov> wrote:

Angelo,

Tim Wheeler is asking about a project that would burn chicken litter to make electricity, as described in a press release from Jan., 2013 from the Governor's office

<http://www.governor.maryland.gov/blog/?p=8056>

He's asking whether there are any permit applications. I thought it made sense to start with air but cc'ed the other administrations in case they have anything. Thanks.

Jay

Jay Apperson
Deputy Director, Office of Communications
Maryland Department of the Environment
410-537-3003
443-604-0091 (mobile)



Karen Irons -MDE- <karen.iron@maryland.gov>

Re: Green Planet

1 message

Jay Apperson -MDE- <jay.apperson@maryland.gov>

Thu, Jul 10, 2014 at 12:48 PM

To: Karen Irons -MDE- <karen.iron@maryland.gov>

Cc: Angelo Bianca -MDE- <angelo.bianca@maryland.gov>

So the status is no permit application has been filed but the company has been in contact with us and we expect that one will be filed?

Jay Apperson
Deputy Director, Office of Communications
Maryland Department of the Environment
410-537-3003
443-604-0091 (mobile)



On Thu, Jul 10, 2014 at 12:39 PM, Karen Irons -MDE- <karen.iron@maryland.gov> wrote:

Email regarding Green Planet
Karen Irons, Manager
Air Quality Permits Program
Maryland Department of Environment
410-537-3256

----- Forwarded message -----

From: **Mark Schroeder** <mark.schroeder@castlebridgegrp.com>
Date: Thu, Jul 10, 2014 at 11:50 AM
Subject: Re: Green Planet
To: Karen Irons -MDE- <karen.iron@maryland.gov>
Cc: Angelo Bianca -MDE- <angelo.bianca@maryland.gov>

Karen,

I'm meeting next week with Coleman and his team to get the project plan finalized. I'll know more then and can fill you in on the timing.

Sent from my Verizon Wireless 4G LTE Tablet

----- Original message -----

From: Karen Irons -MDE- <karen.iron@maryland.gov>
Date: 07/10/2014 9:28 AM (GMT-05:00)
To: Mark Schroeder <mark.schroeder@castlebridgegrp.com>
Cc: Angelo Bianca -MDE- <angelo.bianca@maryland.gov>
Subject: Re: Green Planet

Hi Mark

Can you provide an update on the status of your application?

Thanks

Karen Irons, Manager
Air Quality Permits Program
Maryland Department of Environment
410-537-3256

On Wed, May 7, 2014 at 4:41 PM, Mark Schroeder <mark.schroeder@castlebridgegrp.com> wrote:

Gary,

Thanks again for taking the time to meet with Karen and I today. As promised, attached is the draft letter we presented to you. We look forward to your comments.

Mark



Karen Irons -MDE- <karen.iron@maryland.gov>

Re: Clean Bay Power

1 message

Karen Irons -MDE- <karen.iron@maryland.gov>

Mon, Jul 14, 2014 at 8:17 AM

To: Angelo Bianca -MDE- <angelo.bianca@maryland.gov>

Yes I am available- where is meeting?

Karen Irons, Manager
Air Quality Permits Program
Maryland Department of Environment
410-537-3256

On Mon, Jul 14, 2014 at 8:00 AM, Angelo Bianca -MDE- <angelo.bianca@maryland.gov> wrote:

Are you available at 1 on Tuesday?

----- Forwarded message -----

From: Abigail Hopper -GOV- <abigail.hopper@maryland.gov>**Date: Fri, Jul 11, 2014 at 7:37 PM****Subject: Re: Clean Bay Power****To: Angelo Bianca -MDE- <angelo.bianca@maryland.gov>**

Are you or your team free on Tuesday? I have a meeting with green planet at 1. They would love to meet with you. Sounds like good progress.

Sent from my iPhone

On Jul 10, 2014, at 8:54 AM, Angelo Bianca -MDE- <angelo.bianca@maryland.gov> wrote:

Ok...I will call and see what they say. Thanks

On Thu, Jul 10, 2014 at 8:51 AM, Abigail Hopper -GOV- <abigail.hopper@maryland.gov> wrote:

I talked to Coleman yesterday but not about that. I have a meeting set with them for next week. But feel free to reach out. Keep me posted!

Sent from my iPhone

> On Jul 10, 2014, at 8:50 AM, Angelo Bianca -MDE- <angelo.bianca@maryland.gov> wrote:

>

> Abby,

>

> Have you had any contact with Green Planet lately? We are curious as to the status of their air permit application package, which they expected to submit by June 1st but has yet to be submitted. I do not want to bug them for info if someone else has some knowledge about where things stand. Any info is helpful.

>

> Thanks

>

> Angelo



Karen Irons -MDE- <karen.iron@maryland.gov>

Re: Green Planet

1 message

Angelo Bianca -MDE- <angelo.bianca@maryland.gov>

Sun, Jul 27, 2014 at 11:35 PM

To: Karen Irons -MDE- <karen.iron@maryland.gov>

Thanks. I will let Abby know.

Sent from my iPhone

On Jul 25, 2014, at 1:59 PM, Karen Irons -MDE- <karen.iron@maryland.gov> wrote:

Angelo

I talked to Mike Gordon in EPA Region III's Air Permits Program on July 24 and Gary Gross in EPA Region III's Land program on July 25 regarding Green Planet's non-solid waste determination.

Both Mike and Gary told me essentially the same thing. It is up to Green Planet to make a self-determination that their poultry litter is a fuel and not a solid waste. Although EPA has made determinations in the past and/or issued "comfort letters", in general, EPA meant for this process to be a self-determination process. In the case of poultry litter, there are previous determinations that Green Planet can follow as well.

All official EPA non-hazardous secondary material determinations have to go through EPA Headquarters; according to both Mike and Gary, getting a determination from EPA headquarters takes a minimum of a year and likely longer. Gary did say he could draft a determination in a month or so but it would still have to go through EPA headquarters before it could be issued. Gary also mentioned that he sent an email to Mark Schroeder (representing Green Planet) on May 14 with comments on Green Planet's self-determination including "I presume you will have numerous questions as you go through these comments. Feel free to call me to discuss them". Gary has not heard from Mark Schroeder since then.

Karen Irons, Manager
Air Quality Permits Program
Maryland Department of Environment
410-537-3256