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October 23, 2012

via email and US mail

RECEIVED

OCT 29 2012

DIVISION OF AIR RESOURCE MANAGEMENT

Mr. David Read
Florida Department of Environmental Protection
Division of Air Resource Management
2600 Blair Stone Road, MS #5505
Tallahassee, Florida 32399-2400

Re: Class I Area Increment Analysis
BP Biofuels – Highlands Project

Dear Mr. Read:

On behalf of BP Biofuels – Highlands (BPH) and in response to a Request for Additional Information (RAI) issued by the Florida Department of Environmental Protection (FDEP), AMEC is providing the results of a Class I Area increment analysis conducted for BPH's revised permit application to construct a cellulosic ethanol production facility at a site in southeastern Highlands County, Florida. The site is located approximately 154 kilometers (km) from Everglades National Park and 216 km from the Chassahowitzka Wilderness Area.

This permitting action involves the modification of the original air construction permit (Air Permit No. 0550061-001-AC, PSD-FL-406) that was issued to BPH on March 22, 2010, by FDEP, pursuant to the rules for the PSD at Section 62-212.400, Florida Administrative Code (F.A.C.). A subsequent extension of this permit was granted by FDEP on August 25, 2011 (Air Permit No. 0550061-002-AC, PSD-FL-406A). This modification reflects process and equipment changes that have arisen as more detailed engineering for the project has taken place. The modified project will result in net emission decreases of all regulated PSD pollutants. However, based on PSD applicability criteria, this modification remains subject to PSD requirements. The Class I Area increment analysis presented herein provides an update of the analysis previously performed for the proposed facility and accepted by the Federal Land Managers (FLM) of the respective Class I Areas.

BPH submitted an application to modify its air construction permit on September 11, 2012. The application included an assessment of Class I Area impacts by using the Federal Land Managers Air Quality Related Values Work Group's (FLAG) guideline "Q/D" technique to demonstrate insignificant impacts in the Class I Areas. FDEP subsequently requested that dispersion modeling specifically be performed to demonstrate compliance with Class I Area increments for nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter (PM_{10} and $PM_{2.5}$).

For air quality dispersion modeling analyses, the FLMs follow Appendix W of Part 51 (USEPA's Guideline on Air Quality Models, revised November 2005), as required by the PSD regulations

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at 40 CFR 51.166(1) and 52.21(1), and the recommendations of the Interagency Work Group on Air Quality Modeling (IWAQM). When reviewing modeling and impact analysis results, all FLMs consider frequency, magnitude, duration, location of impacts, and other factors, in determining whether impacts are adverse.

The CALPUFF dispersion model is recommended by USEPA and the FLMs for analyses covering distances greater than 50 kilometers (km). CALPUFF version 5.8 (dated June 23, 2007) was used in this analysis to predict the Class I Area increment impact of the project on the Everglades National Park and the Chassahowitzka Wilderness Area. CALPUFF is a multi-layer, multi-species, non-steady state puff dispersion model which is used to simulate the time and space varying meteorological conditions on pollutant transport, transformation, and removal (see Table 1 for CALPUFF features).

CALPUFF requires several types of input data such as source emissions and locations (source parameters), meteorological data, and receptor data for simulation of impact of emissions sources on ambient air. Tables 6-1 and 6-2 of the permit application provide the emissions and stack parameters modeled in this increment analysis.

The AERMET meteorological files used for the Class II Area analysis were also used for the meteorological input to CALPUFF. The meteorological data consist of National Weather Service (NWS) data collected at West Palm Beach International Airport (WBAN 12844) from 2006 through 2010 and concurrent upper air radiosonde data collected at Miami, Florida (WBAN 92803).

The analysis was performed by using receptor grids provided by the FLMs, which include 901 receptors located in the Everglades National Park and 37 receptors located in the Chassahowitzka Wilderness Area. Figure 1 presents a map showing the location of the facility site relative to the Class I areas.

The regulatory defaults of the CALPUFF model were used for most parameters. No subgrid scale was used for complex terrain. Chemical transformation, overwater/coastal effects, wet removal and dry deposition were not modeled, which results in the maximum potential estimated impacts for the pollutants.

The maximum predicted concentrations are presented in Tables 2 and 3, and are compared to Class I Area significant impact levels (SILs) promulgated ($PM_{2.5}$) and proposed (NO_2, SO_2, and PM_{10}) by USEPA. The modeling files are included on the enclosed CDROM.

In all cases, maximum predicted concentrations are less than the promulgated and proposed USEPA Class I Area SILs. Because the modeling demonstrates insignificant impacts in the

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Class I areas, BP Biofuels - Highlands concludes that the proposed facility will not adversely impact the Class I areas. BP Biofuels - Highlands requests that FDEP consider this analysis and confirm that no additional modeling needs to be conducted.

If you have any questions regarding this notification, please call me at (207) 828-2642.

Very truly yours,
AMEC Environment & Infrastructure

Jeffrey R. Harrington

Jeffrey R. Harrington, P.E.
Senior Project Engineer

cc: K. Kekeisen – BP Biofuels Highlands
R. Perry – BP Biofuels
S. Ochs – AMEC

Enclosure: CD with modeling files

Table 1. Summary of CALPUFF Features

Feature	Details
Source Types	Point Sources (constant or variable emissions)
	Line Sources (constant or variable emissions)
	Volume Sources (constant or variable emissions)
	Area Sources (constant or variable emissions)
Non-Steady State Emissions and Meteorological Conditions	Gridded 3-D fields of meteorological variables (winds, temperature
	Spatially-variable fields of mixing height, friction velocity, convective velocity scale, Monin-Obukhov length, precipitation rate
	Vertically and horizontally-varying turbulence and dispersion rates
	Time-dependent source and emissions data
Efficient Sampling Functions	Integrated puff formulation
	Elongated puff (slug) formulation
Dispersion Coefficient (σ_y,σ_z) Options	Direct measurements of σ_v and σ_w
	Estimated values of σ_v and σ_w based on similarity theory
	Pasquill-Gifford (PG) dispersion coefficients (rural areas)
	McElroy-Pooler (MP) dispersion coefficients (urban areas)
	CTDM dispersion coefficients (neutral/stable)
Vertical Wind Shear	Puff splitting
	Differential advection and dispersion
Plume Rise	Partial penetration
	Buoyant and momentum rise
	Stack tip effects
	Vertical wind shear
	Building downwash effects
Building Downwash	Huber-Snyder method
	Schulman-Scire method
Subgrid Scale Complex Terrain	Dividing streamline, H_d: • Above H_d, puff flows over the hill and experiences altered diffusion rates • Below H_d, puff deflects around the hill, splits, and wraps around the hill
Interface to the Emissions Production Model (EPM)	Time-varying heat flux and emissions from controlled burns and wildfires
Dry Deposition	Gases and particulate matter
	Three options: • Full treatment of space and time variations of deposition with a resistance model • User-specified diurnal cycles for each pollutant • No dry deposition
Overwater and Coastal Interaction Effects	Overwater boundary layer parameters
	Abrupt change in meteorological conditions, plume dispersion at coastal boundary
	Plume fumigation • Option to introduce subgrid scale Thermal Internal Boundary Layers (TIBLs) into coastal grid cells
Chemical Transformation Options	Pseudo-first-order chemical mechanism for SO_2, SO_4^{2-}, NO_X, HNO_3, and NO_3^- (MESOPUFF II method)
	User-specified diurnal cycles of transformation rates
	No chemical conversion
Wet Removal	Scavenging coefficient approach
	Removal rate a function of precipitation intensity and precipitation type
Graphical User Interface	Point-and-click model setup and data input
	Enhanced error checking of model inputs
	On-line help files

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Table 2. Modeling Results – Everglades National Park

Pollutant (Load)	Averaging Period	Year	Date (Hr)	Receptor UTM Coordinates (km)	CALPUFF Predicted Conc. (μg/m^3)	Significant Impact Levels [a] (μg/m^3)
SO_2	3-hour	2010	11/19 (04)	517.97, 2848.47	0.0617	1.0
	24-hour	2010	2/20	548.05, 2848.55	0.0273	0.2
	Annual	2010	--	548.05, 2848.55	0.00124	0.1
PM_{10}	24-hour	2010	2/20	548.05, 2848.55	0.00880	0.3
	Annual	2010	--	548.05, 2848.55	0.000400	0.2
$PM_{2.5}$	24-hour	2010	2/20	548.05, 2848.55	0.00875	0.07 [b]
	Annual	2010	--	548.05, 2848.55	0.000398	0.06 [b]
NO_2	Annual	2010	--	548.05, 2848.55	0.000954	0.1

[a] SILs proposed by USEPA (61 FR 38338) in 1996. Final SILs have not been promulgated.

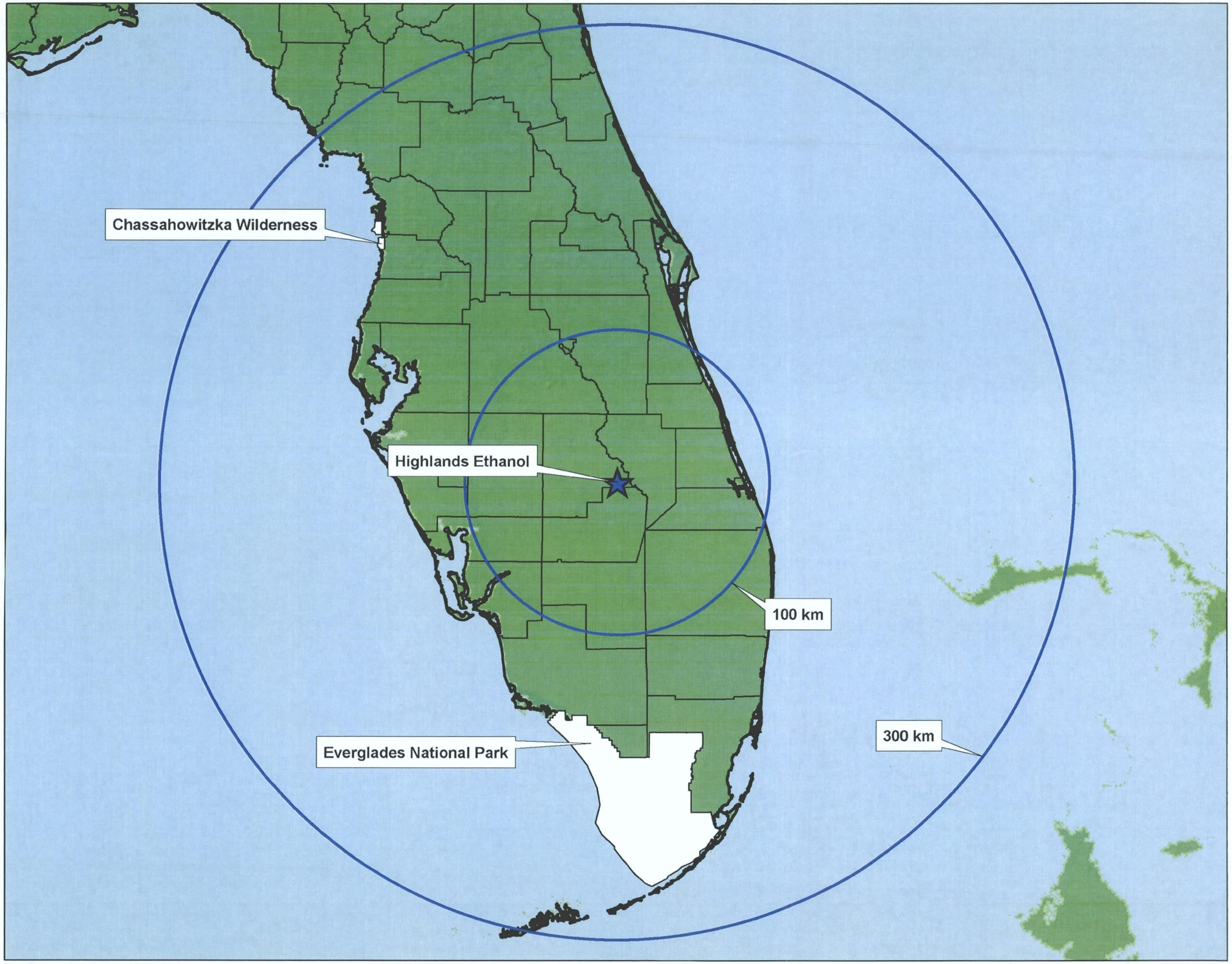
[b] SILs promulgated by USEPA in September 2010 and by FDEP in 62-212.400.

Table 3. Modeling Results – Chassahowitzka Wilderness Area

Pollutant (Load)	Averaging Period	Year	Date (Hr)	Receptor UTM Coordinates (km)	CALPUFF Predicted Conc. (μg/m^3)	Significant Impact Levels [a] (μg/m^3)
SO_2	3-hour	2009	12/9 (01)	337.46, 3166.19	0.0493	1.0
	24-hour	2006	1/18	337.46, 3166.19	0.0127	0.2
	Annual	2009	--	339.91, 3166.15	0.00128	0.1
PM_{10}	24-hour	2006	1/18	337.46, 3166.19	0.00411	0.3
	Annual	2009	--	339.91, 3166.15	0.000410	0.2
$PM_{2.5}$	24-hour	2006	1/18	337.46, 3166.19	0.00408	0.07 [b]
	Annual	2009	--	339.91, 3166.15	0.000410	0.06 [b]
NO_2	Annual	2009	--	339.91, 3166.15	0.000980	0.1

[a] SILs proposed by USEPA (61 FR 38338) in 1996. Final SILs have not been promulgated.

[b] SILs promulgated by USEPA in September 2010 and by FDEP in 62-212.400.



LEGEND

Highlands Ethanol Location

Class I Areas

LOCATION MAP

NOTES & SOURCES

Map Projection: NAD 83, UTM Zone 17N, Meters
Map Source: ESRI

TITLE

Highlands Ethanol
Class I Area Locations

0 100 Kilometers

AMEC Environment & Infrastructure
Portland, Maine

FIGURE 1