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(1.08.09.13)

U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
NEPA DETERMINATION

RECIPIENT: AVAPCO LLC **STATE:** GA

PROJECT TITLE : Advanced Biofuels and Bioproducts with AVAP

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-001232	DE-EE0007967	GFO-0007967-001	GO7967

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:
Description:

A9 Information gathering, analysis, and dissemination	Information gathering (including, but not limited to, literature surveys, inventories, site visits, and audits), data analysis (including, but not limited to, computer modeling), document preparation (including, but not limited to, conceptual design, feasibility studies, and analytical energy supply and demand studies), and information dissemination (including, but not limited to, document publication and distribution, and classroom training and informational programs), but not including site characterization or environmental monitoring. (See also B3.1 of appendix B to this subpart.)
B3.6 Small-scale research and development, laboratory operations, and pilot projects	Siting, construction, modification, operation, and decommissioning of facilities for smallscale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial deployment.
B3.15 Small-scale indoor research and development projects using nanoscale materials	Siting, construction, modification, operation, and decommissioning of facilities for indoor small-scale research and development projects and small-scale pilot projects using nanoscale materials in accordance with applicable requirements (such as engineering, worker safety, procedural, and administrative regulations) necessary to ensure the containment of any hazardous materials. Construction and modification activities would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible).

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to AVAPCO LLC to validate processes that produce jet fuel and other byproducts from woody biomass, and develop plans for a demonstration-scale integrated biojet fuel production plant. This NEPA determination is for Phase 1. If the recipient is selected to move forward into Phase 2, further NEPA review will be necessary once Phase 2 tasks are defined.

Activities associated with Phase 1 of the proposed project would include data analysis, computer modeling, engineering design, laboratory scale research and development (R&D), and equipment relocation and installation. To validate the proposed integrated production process, the recipient would link together two previously established conversion processes by assembling small scale ethanol-to-ethylene (ETE) and alcohol-to-jet (ATJ) production plants at the Thomaston Biorefinery in Thomaston, Georgia. This facility is currently in operation, and would supply approximately 5 dry tons of woody biomass feedstock converted to cellulosic ethanol using existing production lines and equipment. A genetically engineered species of yeast (Saccharomyces cerevisiae) would be utilized to enhance ethanol production from cellulosic feedstock. Validation activities would take place over an 18 month period and result in the production of approximately 8 gallons of jet fuel. At the conclusion of the proposed project, process equipment would remain onsite for future utilization.

The Thomaston Biorefinery is a purpose-built, dedicated industrial facility for biomass conversion. The proposed modifications would not change the use, mission or operation of the facility. The ETE and ATJ equipment would be installed within a designated Class 1/Div 2 containment area on previously developed land. No additional permits, permit modifications, or licenses would be needed for the proposed activities, and fire marshal approval would be obtained before conducting work in any new Class 1/Div 2 areas. Emissions from the Thomaston Biorefinery are currently covered under an Air Quality Permit issued for the facility by the Georgia Department of Natural Resources. Due to the small scale of the proposed validation activities, emissions resulting from Phase 1 of the proposed project

are not expected to exceed any reporting or mitigations thresholds.

In addition to the jet fuel primary product, cellulosic sugars (10-30 kg) and nanocellulose (2 kg) would also be produced from installed equipment. Sugar would be shipped to Genomatica in San Diego, CA for pilot scale conversion to biofuel at their dedicated R&D laboratory. Nanocellulose would be used by Georgia Institute of Technology in Atlanta, GA and the University of Tennessee in Knoxville, TN to develop a spun-fiber composite. All output products would be produced in small test quantities for validation purposes only. No change in the use, mission or operation of existing facilities would arise out of these efforts.

The proposed project would involve the use and handling of various hazardous chemicals, nanoscale materials, and Biosafety Level 1 Genetically Modified Organisms (GMOs). AVAPCO has established a Chemical Hygiene Program and Laboratory Protocol for Using Licensed GMOs in accordance with all pertinent federal, state and local regulations. Efforts to mitigate hazards include protocols for the unloading, storage, handling and disposal of hazardous chemicals and nanocellulose, as well as for the containment and destruction of GMOs. Non-hazardous waste generated at the Thomaston Biorefinery would include process streams containing dissolved lignin, residual sugars and residual ethanol. These streams would be collected in a waste tank and hauled offsite for disposal by a licensed waste hauler. Small volumes of liquid waste containing flammable components would be diluted to safe levels and collected in the waste tank for haul out. All liquid and solid wastes containing GMOs would be properly sterilized prior to disposal. Genomatica has a Safety Committee in place to ensure that industry best practices are being followed, and utilizes 3rd party safety consultants to ensure compliance with all appropriate regulations. The University of Tennessee and Georgia Institute of Technology follow departmental-specific safety procedures, including for the handling of nanomaterials, and each University employs a campus safety/chemical hygiene officer.

Based on the review of the proposal, DOE has determined the tasks in Phase 1 fit within the class of action(s) and the integral elements of Appendix B to Subpart D of 10 CFR 1021 outlined in the DOE categorical exclusion(s) selected above. DOE has also determined that: (1) there are no extraordinary circumstances (as defined by 10 CFR 1021.410 (2)) related to the proposal that may affect the significance of the environmental effects of the proposal; (2) the proposal has not been segmented to meet the definition of a categorical exclusion; and (3) the proposal is not connected to other actions with potentially significant impacts, related to other proposals with cumulatively significant actions, or an improper interim action. Phase 1 tasks are categorically excluded from further NEPA review.

NEPA PROVISION

DOE has made a conditional NEPA determination for this award, and funding for certain tasks under this award is contingent upon the final NEPA determination.

Insert the following language in the award:

You are restricted from taking any action using federal funds, which would have an adverse affect on the environment or limit the choice of reasonable alternatives prior to DOE/NNSA providing either a NEPA clearance or a final NEPA decision regarding the project.

Prohibited actions include:
Phase 2
This restriction does not preclude you from:
Phase 1
If you move forward with activities that are not authorized for federal funding by the DOE Contracting Officer in advance of the final NEPA decision, you are doing so at risk of not receiving federal funding and such costs may not be recognized as allowable cost share.

Note to Specialist :

Bioenergy Technologies Office
This NEPA determination requires a tailored NEPA Provision.
NEPA review completed by Whitney Doss, 04/11/17

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By Casey Strickland Date: 4/11/2017
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

☐ Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

- ☐ Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
- ☐ Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____ Date: _____

Field Office Manager