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

RECIPIENT: Global Algae Innovations, Inc. **STATE:** CA

PROJECT TITLE : Prevention of low productivity periods in large-scale microalgae cultivation

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001628	DE-EE0008121	GFO-0008121-001	

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.
B5.15 Small-scale renewable energy research and development and pilot projects	Small-scale renewable energy research and development projects and small-scale pilot projects, provided that the projects are located within a previously disturbed or developed area. Covered actions would be in accordance with applicable requirements (such as local land use and zoning requirements) in the proposed project area and would incorporate appropriate control technologies and best management practices.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Global Algae Innovations, Inc. (GAI) to investigate the causes of low algal productivity and develop methodology for sustainable high algal productivity through all growing seasons and weather conditions, including tools to control microbial ecology and dissolved organic matter.

The proposed project would involve data analysis, computer modeling, laboratory-scale research and development, and small-scale outdoor algae growth trials. Samples of algae and associated organic matter would be grown and collected from existing outdoor cultivation ponds at the Kauai Algae Facility (KAF) operated by GAI in Lihue, HI. The project would also sample water from nearby coastal waters (Kauai, HI) in order to co-cultivate a local, naturally occurring class of protists. Samples would be analyzed for viruses, microbes, non-target algae, fungi and protozoa by GAI at their established Kauai Algae Lab (KAL) in Lihue, HI. In addition, various other experiments and analytical testing of the samples would be undertaken by a team of subrecipients. At Scripps Institute of Oceanography (SIO) in La Jolla, CA, activities would include laboratory cultivation and characterization of microbial strains, DNA sequencing, and genomic/bioinformatics analyses. At the J. Craig Venter Institute (JCVI) in La Jolla, CA, activities would include cultivation and processing of pond samples and associated viruses for sequencing as well as computational analyses. Some desktop-based work would occur at a 3rd party consultant's office in Denver, CO.

Activities taking place at Sandia National Laboratories in Livermore, CA would include the growth, processing and analysis of algae and associated organisms from both culture and outdoor pond samples. Any work proposed to be conducted at a DOE laboratory may be subject to additional NEPA review by the cognizant DOE NEPA Compliance Officer for the specific DOE laboratory prior to initiating such work. Further, any work conducted at a DOE laboratory must meet the laboratory's health and safety requirements.

All laboratory and outdoor project work would occur at existing, dedicated research and development facilities that do

not require physical modification or new equipment for the proposed activities. These facilities were purpose-built for the type of activities being proposed, which would not exceed the scope of past and ongoing work at these locations; therefore, no adverse impacts to sensitive resources are expected as a result of the proposed activities at any of these locations. No change in the use, mission or operation of existing facilities would arise out of this effort. GAI and subrecipients have all applicable permits in place, and would not need additional permits for the proposed activities.

Certain project tasks would involve the use and handling of various hazardous materials, including chemicals and commercial reagents for analytical chemistry (used in quantities under 10g a year each) and agricultural fertilizers (nutrients for cultivation of algae would be used in quantities under 300g per year and microelements in quantities under 5g per year). Such materials are used routinely at the locations where project work would occur, and all hazardous materials are managed in accordance with federal, state, and local environmental regulations. Fertilizers used for algae production are stored in dry form within designated structures, and the handling of hazardous chemicals would occur in-lab following standard best corporate or University health and safety policies, which include employee training, personal protective equipment, and restricted access. The laboratories in which proposed work would be performed are properly equipped with safety requirements such as chemical fume hoods, biological safety cabinets, and ventilation systems. The proposed project would not involve the use or development of genetically engineered microorganisms, and Biosafety Level 1 (non-pathogenic strains, minimal potential hazards) would apply to laboratory activities involving microbiology.

Depending on project activity, hazardous materials would either be consumed during algal production, or properly maintained in laboratory satellite accumulation areas pending treatment and disposal in accordance with relevant University or corporate protocols. Routine quantities of hazardous waste generated during chemical analyses would be collected by a certified hazardous waste disposal company in the area or transferred to an onsite Resource Conservation and Recovery Act (RCRA) permitted facility, consolidated and packaged for transport to an offsite disposal facility. Small quantities of non-hazardous laboratory and office waste generated by the proposed project would be disposed of in appropriate containers and discarded via scheduled trash/recycling operations and infrastructure already in place at these facilities.

Water from the Lihue ditch system (run-off water from Waialeale) would be used for outdoor cultivation experiments in small raceways/ponds. During pond production, no more than 10,000 gallons per day of water would be used. All left over media would be recycled and reused. Non-hazardous wastewater from outdoor algal production would be evaporated in a secondary pond following existing procedures. Any potential biohazardous materials used in molecular biological experiments would be maintained and disposed of at SIO; no biohazardous waste would be generated at other project locations. Microbiological cultures would be treated with disinfecting agents prior to disposal and all petri dishes and/or culture flasks autoclaved prior to disposal in accordance with University approved protocols. All liquid biological waste would be either chemically disinfected or autoclaved before disposal via in-lab sinks. All solid biological waste would be autoclaved and then disposed as trash.

At the conclusion of the proposed project, all remaining equipment and materials would be maintained in the inventory of GAI and/or subrecipients for future research and development.

Based on the review of the proposal, DOE has determined the proposal fits 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. This proposal is categorically excluded from further NEPA review.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

If the Recipient intends to make changes to the scope or objective of this project, the Recipient is required to contact the Project Officer, identified in Block 15 of the Assistance Agreement before proceeding. The Recipient must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved. If the Recipient moves forward with activities that are not authorized for Federal funding by the DOE Contracting Officer in advance of a final NEPA decision, the Recipient is doing so at risk of not receiving Federal funding and such costs may not be recognized as allowable cost share.

Insert the following language in the award:

You are required to:
Any work proposed to be conducted at a DOE laboratory may be subject to additional NEPA review by the cognizant

DOE NEPA Compliance Officer for the specific DOE laboratory prior to initiating such work. Further, any work conducted at a DOE laboratory must meet the laboratory's health and safety requirements.

Note to Specialist :

Bioenergy Technologies Office
This NEPA determination requires a tailored NEPA Provision.
NEPA review completed by Whitney Doss, 9/22/2017

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Casey Strickland Date: 9/25/2017
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