

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Utah State University**STATE:** UT

PROJECT TITLE: Synergistic Municipal Wastewater Treatment Using a Rotating Algae Biofilm Reactor

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DOE-FOA-0002203	DE-EE0009271	GFO-0009271-001	G09271

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Policy 451.1), 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.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to Utah State University (USU) to increase the economic feasibility and commercialization of algal energy and bioproducts technology. Specifically USU would improve the feasibility and readiness of the Rotating Algae Biofilm Reactor (RABR) and biofilm microalgae.

USU would conduct laboratory testing on biofilm reactors regarding yield and nutrient removal from wastewater. Project partner Pacific Northwest National Laboratory (PNNL) would conduct laboratory scale algal cultivation experiments to attempt to maximize biomass productivity in lab-scale RABR units.

USU would then operate a larger scale RABR at the Central Valley Water Reclamation Facility (CVWRF) in Salt Lake City. This would include utilizing a pre-existing outdoor tank with an approximate capacity of 1100 gallons of waste water. The system would utilize a biofilm reactor with cotton cloth belt, fabricated by WestTech Inc (Salt Lake City, Utah), for use in RABR reactors. The outdoor RABR system would utilize the existing waste water stream at CVWRF. Experiments at CVWRF would include increasing and decreasing flows and speeds within the RABR. Final production would be approximately 2 kg per day of bioproducts.

Bioproducts produced from the outdoor RABR experiments would be harvested and be utilized for two additional experiments to demonstrate algal energy and bioproducts technology. First, bioproducts produced from the RABR experiments would be sent to PNNL for conversion in the PNNL lab to bio-crude. Additional bioproducts would be dried in the lab at USU and then sent to Algix (Meridian, MS) for conversion into bioplastics. All work would be laboratory scale, with up to 10 kg of biomass dried and shipped to Algix.

Finally, USU and PNNL would conduct a techno-economic analysis.

All work at USU and PNNL would occur in pre-existing laboratories. Work at CVWRF would occur in a preexisting tank. Work at Algix would be small scale and occur in their facility. No modifications to facilities or new permits would be required. All work would follow existing University and corporate health and safety guidelines, including training and use of PPE.

Any work proposed to be conducted at a federal facility may be subject to additional NEPA review by the cognizant federal official and must meet the applicable health and safety requirements of the facility.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Bioenergy Technology Office
This NEPA determination does not require a tailored NEPA provision.
Review completed by Roak Parker, 02/17/2021

FOR CATEGORICAL EXCLUSION DETERMINATIONS

The proposed action (or the part of the proposal defined in the Rationale above) fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D. To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposed action that may affect the significance of the environmental effects of the proposal.

The proposed action has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

The proposed action is categorically excluded from further NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____

 Electronically Signed By: **Roak Parker**
NEPA Compliance Officer

Date: 2/17/2021

FIELD OFFICE MANAGER DETERMINATION

- Field Office Manager review not required
- Field Office Manager review required

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

Field Office Manager's Signature: _____

Field Office Manager

Date: _____