Environmental Review Form for Argonne National Laboratory

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Version:	5
Your Form ID:	ANL-985-1524
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Date:	9/24/2020 3:57:28 PM
Created By:	Matula, Quinn R.

Creator

Badge:	**25154**	Name:	**Jastrow, Julie D.**
Cost Center:	**167**	Division:	**EVS**
Job Title:	**Senior Terrestrial Ecologist/Group Leader**	Employee Type:	**Regular Full-Time Exempt**
Building:	**203**	Lab Extension:	**2-3226**

General Information

Project/Activity Title: Ecosystem Biogeochemistry - Field Research

ASO NEPA Tracking No.:

Type of Funding: DOE Office of Science

B & R Code: KP160101, KP170200

Identifying Number: 2064-1571

SPP Proposal Number:

CRADA Proposal Number:

Work Project Number:

ANL Accounting Number: 34259/PRJ1008606, 50800/PRJ1002265, 66340/PRJ1002274 (Item 3a in Field Work Proposal)

Other (explain):

List appropriate NEPA Owners:

Division: EVS NEPA Owner:

Financial Plans

To select a Financial Plan, click the magnifying glass icon to open a search window.

Cost Center: Project: Phase: Task:

Description of Proposed Action

This form updates ASO-CX-354. These projects and related tasks utilize the existing switchgrass field experiment at Fermilab and the other locations identified below. In terms of field work, tasks would remain essentially the same as before with the addition of some planned application of nitrogen fertilizer to some subplots (at rates that would be below those typically used in row-crop agriculture). The objective of Argonne's ecosystem biogeochemistry research includes studies of plant-soil-atmosphere interactions and biogeochemistry at molecular to landscape scales, with specific emphasis on the below ground ecosystem. Field and laboratory studies address terrestrial components of the global carbon cycle; factors controlling the quantity, quality, and spatial distribution of soil organic matter; and the roles of soil microbes and plant roots in ecosystem-scale responses to environmental forcing factors. Field research would consist of the collection of samples of vegetation and soil from within small areas (less than 4 square meters each) including soil coring up to 3 meters deep and cut-face sampling up to one and a half meters. Multiple samples may be taken at any given site. As planned, the activities would not result in disturbances to any sensitive resources.

Description of Affected Environment

Field projects would be conducted at agricultural, grassland, shrubland, forest, and tundra sites. Research sites include long-term plots established at the Fermilab National Environmental Research Park in Batavia, Illinois, and multiple locations throughout the state of Alaska.

Potential Environmental Effects

- Attach explanation for each "yes" response near bottom of form.
- **See Instructions for Completing Environmental Review Form.**

Section A (Complete For All Projects)			Yes	No	Explanation
1.	Project evaluated for Pollution Prevention and Waste Minimization opportunities and details provided under items 2, 4, 6, 7, 8, 16, and 20 below, as applicable		◉	○	See below for details.
2.	Air Pollutant Emissions		○	◉	
3.	Noise		○	◉	
4.	Chemical/Oil Storage/Use		◉	○	Some gasoline powered tools may be used for extracting and collecting samples in isolated areas. The gasoline would be stored and dispensed from approved containers and unused gasoline would be transported out when the sampling is done. No more than three gallons of fuel would be needed at any single site. Additionally, nitrogen fertilizer would be applied annually to a portion of the switchgrass experiment (at rates below those typically used in row-crop agriculture). This experiment consists of 30 plots, each of which is 6 m by 6 m (36 square meters). We would fertilize no more than half of each plot (total area of 0.133 acres). The nitrogen application rate would likely be 60 lbs/acre/year or less. Thus, the total amount of nitrogen applied to the site would likely be less than 8 lbs annually. By comparison nitrogen application rates for corn can range from 100 to 200 lbs per acre. We would likely use commercially available granular urea, which can be purchased from garden centers or farm supply stores. Since urea is 45% nitrogen, we would need to apply 17.8 lbs of urea to achieve a nitrogen application rate of 60 lbs/acre. Even if we doubled these rates our total annual application would be 16 lbs of nitrogen (35.6 lbs of urea). The main environmental concern with the use of nitrogen fertilizers in agricultural soils is leaching to groundwater, but this should not be a problem at the rates we would use for two reasons. First, our rates would be lower than typically used in row crop agriculture. Second, in contrast to annual crops, switchgrass is a perennial species with an established high-density, deep root system that can rapidly absorb applied nitrogen fertilizer (as demonstrated in the attached supporting research document).
5.	Pesticide Use		◉	○	We typically apply a pre-emergent herbicide across the switchgrass plots in the spring and then spot spray with glyphosate as needed. Two of our technicians are state-licensed for this purpose and follow state policies.
6.	**Toxic Substances Control Act (TSCA) Substances**				
	6a.	Polychlorinated Biphenyls (PCBs)	○	◉	
	6b.	Asbestos or Asbestos Containing Materials	○	◉	
	6c.	Other TSCA Regulated Substances	○	◉	
	6d.	Import or Export of Chemical Substances	○	◉	
7.	Biohazards		○	◉	
8.	Effluent/Wastewater (If yes, see question #12 and		○	◉	

	contact Peter Lynch (HSE) at 2-4582 or lynch@anl.gov)			
9.	**Waste Management**			
	9a. Construction or Demolition Waste	○	◉	
	9b. Hazardous Waste	○	◉	
	9c. Radioactive Mixed Waste	○	◉	
	9d. Radioactive Waste	○	◉	
	9e. Asbestos Waste	○	◉	
	9f. Biological Waste	○	◉	
	9g. No Path to Disposal Waste	○	◉	
	9h. Nano-material Waste	○	◉	
10.	Radiation	○	◉	
11.	Threatened Violation of ES&H Regulations or Permit Requirement	○	◉	
12.	New or Modified Federal or State Permits	◉	○	When sites are selected for sample collection, the need for new or modified access, sampling, and environmental permits would be determined by contacting the appropriate federal or state agencies, such as the U.S. Bureau of Land Management, U.S. Fish & Wildlife Service, U.S. Forest Service, U.S. National Park Service, U.S. Army Corps of Engineers, the State of Alaska Department of Natural Resources, the North Slope Borough, and the relevant Alaska Native Corporations.
13.	Siting, Construction, or Major Modification of Facility to Recover, Treat, Store, or Dispose of Waste	○	◉	
14.	Public Controversy	○	◉	
15.	Historic Structures and Objects	○	◉	
16.	Disturbance of Pre-existing Contamination	○	◉	
17.	Energy Efficiency, Resource Conserving, and Sustainable Design Features	○	◉	
Section B (For Projects that Occur Outdoors)		**Yes**	**No**	
18.	Threatened or Endangered Species, Critical Habitats, and/or other Protected Species	○	◉	

19.	Wetlands	◉	○	When work is performed in Alaska, sampling may be conducted in wetland areas. Research sampling of isolated areas would involve less than four square meters. Some sampling would require coring to depths of up to three meters or face cut sampling up to depths of one and one half meters. Most sampling would occur when the ground is frozen. Face cuts would be excavated by carefully removing soil and placing it on tarps. After samples are collected, soil is immediately returned in the order it was removed (including the living sod). No long term effects would result from the localized sampling of small areas. Appropriate permits would be obtained.
20.	Floodplain	◉	○	Some sampling in Alaska would likely occur in floodplain areas. However, the localized small scale (less than four square meters) of the sampling protocols would not significantly alter the environment.
21.	Landscaping	○	◉	
22.	Navigable Air Space	○	◉	
23.	Clearing or Excavation	◉	○	See #19 - Wetlands
24.	Archaeological Resources	○	◉	
25.	Underground Injection	○	◉	
26.	Underground Storage Tanks	○	◉	
27.	Public Utilities or Services	○	◉	
28.	Depletion of a Non-Renewable Resource	○	◉	
Section C (For Projects Outside of ANL)		**Yes**	**No**	
29.	Prime, Unique, or Locally Important Farmland	○	◉	
30.	Special Sources of Groundwater (such as sole source aquifer)	○	◉	
31.	Coastal Zones	○	◉	
32.	Areas with Special National Designations (such as National Forests, Parks, or Trails)	◉	○	Some sampling may occur in national forests or national parks. Permission for sampling in these areas would be obtained from the proper authority (i.e., the U.S. Forest Service or U.S. National Park Service), or sampling would be in collaboration with research colleagues associated with these organizations, who already have permission for exactly the same kinds of standard sampling protocols that Argonne would use.
33.	Action of a State Agency in a State with NEPA-type Law	○	◉	
34.	Class I Air Quality Control Region	○	◉	

Categorical Exclusion

Other (Use field below to enter other categorical exclusion)

Project is likely to fall under; B3.8 Outdoor terrestrial ecological and environmental research

ANL NEPA Reviewer Use Only

○ My approval is the final approval necessary

◉ This form requires additional approval from DOE

To be Completed by DOE/ASO

Section D	Yes	No
Are there any extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal?	○	◉
Is the project connected to other actions with potentially significant impacts or related to other proposed action with cumulatively significant impacts?	○	◉
If yes, is a categorical exclusion determination precluded by 40 CFR 1506.1 or 10 CFR 1021.211?	○	○
Can the project or activity be categorically excluded from preparation of an Environment Assessment or Environmental Impact Statement under Subpart D of the DOE NEPA Regulations?	◉	○

If yes, indicate the class or classes of action from Appendix A or B of Subpart D under which the project may be excluded:

This project can be categorically excluded under 10 CFR Part 1021, Subpart D, Appendix B: B 3.8 Outdoor terrestrial ecological and environmental research

If no, indicate the NEPA recommendation and class(es) of action from Appendix C or D to Subpart D to Part 1021 of 10 CFR.

Attachments

File Description: Reduced Nitrogen Losses after Conversion of Row Crop Agriculture to Perennial Biofuel Crops — View Attachment

File Description: ANL-985 from previous funding (same project) — View Attachment

Comments

Update to project-specific ASO-CX-354; scope to include use of nitrogen fertilizer application

Add Approver

Approver Name	Approver Badge	Reason	Delete
Harris, Shana E	311196	EVS ESH Coordinator	
Jastrow, Julie D.	25154	Principal Investigator	

Notifications

The approval notification email will be copied to the people listed below.

Badge	Name	Division	Delete

ASO-CX Number

ASO-CX- 376

Comments:

This DOE approval is tracked as a new ASO-CX-376, because the scope includes use of nitrogen fertilizer application.

Approval

Approver	Action	Date Routed	Action Date	Approval Reason / Comments	Approval Type
Matula, Quinn R.	APPROVED	2020-10-05	2020-10-05 17:19:12.0	Creator :	PRIMARY
Jastrow, Julie D.	APPROVED	2020-10-05	2020-10-05 17:31:54.0	Project Manager :	PRIMARY
Jastrow, Julie D.	APPROVED	2020-10-05	2020-10-05 17:31:54.0	Principal Investigator :	PRIMARY
Harris, Shana E	APPROVED	2020-10-05	2020-10-06 11:41:06.0	EVS ESH Coordinator :	PRIMARY

Wozny, Bryan M.	APPROVED	2020-10-06	2020-10-06 19:13:31.0	NEPA Owner Approval for Argonne Environmental Review :	PRIMARY
Ptak, Jill S.	APPROVED	2020-10-06	2020-10-13 09:00:36.0	ANL NEPA Reviewer :	PRIMARY
Hellman, Karen B.	APPROVED	2020-10-13	2020-10-15 20:39:20.0	ANL-985 Review and Approval :	PRIMARY
Dunn, Michael W. for Kearns, Paul K.	APPROVED	2020-10-15	2020-10-16 07:33:21.0	ANL-985 ANL COO Review and Approval :	DELEGATE
Joshi, Kaushik N.	APPROVED	2020-10-16	2020-10-29 14:17:29.0	ANL-985 DOE-ASO Review and Approval : **This DOE approval is tracked as a new ASO-CX-376.**	PRIMARY
Siebach, Peter Rudolf	APPROVED	2020-10-29	2020-11-02 09:20:25.0	ANL-985 DOE NEPA Compliance Officer Review and Approval :	PRIMARY