Department of Energy
Argonne Site Office
9800 South Cass Avenue
Argonne, Illinois 60439

MAY 10 2011

Dr. Eric Isaacs
Director, Argonne National Laboratory
President, UChicago Argonne, LLC
9700 South Cass Avenue
Argonne, IL 60439

Dear Dr. Isaacs:

SUBJECT: NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DETERMINATION FOR ARGONNE NATIONAL LABORATORY (ANL)

Argonne Site Office (ASO) has approved the following as a categorical exclusion (CX) under the category of "B 3.6 Siting/construction/operation/decommissioning of facilities for bench-scale research, conventional laboratory operations, small-scale research and development and pilot projects".

- Construction and Operation of the Materials Design Laboratory (ASO-CX-285)

Therefore, no further NEPA review is required. However, if any modification or an expansion of the scope is made to the above project, additional NEPA review will be necessary.

Enclosed please find a copy of the approved Environmental Review Form (ERF) for the project. If you have any questions please contact Kaushik Joshi of my staff at (630) 252-4226.

Sincerely,

Joanna M. Livengood

Dr. Joanna M. Livengood
Manager

Enclosure:
As Stated

cc: M. Kamiya, ANL/ESQ, 201, w/encl.
J. Szott, ANL/FMS, 222, w/encl.
P. Rash, ANL/FMS, 214, w/encl.

Environmental Review Form for Argonne National Laboratory

Click on the blue question marks **(?)** for instructions, contacts, and additional information on specific line items.

(?)Project/Activity Title: Construction and Operation of the Materials Design Laboratory

(?)ASO NEPA Tracking No. _____ **(?)Type of Funding**: Line Item
B&R Code _____

(?)Identifying number: OPS-0121 WFO proposal # _____ CRADA proposal # _____
Work Project # _____ ANL accounting # (item 3a in Field Work Proposal) _____
Other (explain) TESC NEPA Log # 1304

(?)Project Manager: John Szott Signature: [signature] Date: 5/6/11

(?)NEPA Owner: Philip C. Rash Signature: [signature] Date: 5/6/11

ANL NEPA Reviewer: *M. A. Kamiya* Signature: [signature] Date: 5/6/2011

I. (?)Description of Proposed Action:

This proposed action will construct an approximately 100,000 square foot building and a 200 space multi-level parking structure on the north side of the Argonne National Laboratory campus. Refer to the attached site map showing the proposed building location and ancillary supporting components to the building. This multiple story facility will be uniquely constructed to allow flexible and sustainable research laboratories that foster multi-disciplinary collaboration to meet the scientific operational needs of the 21st century. This facility will bring together scientific disciplines that are presently spread out over the existing Argonne National Laboratory campus.

The Materials Design Laboratory would support research in a variety of multi-disciplinary areas: cross-cutting chemistry, materials science and engineering, physics and computational science. In select cases, discovery and use-inspired materials and chemistry research will be supplemented by applied research and development that can transition fundamental knowledge to the demonstration of technologies. Research would involve bench-scale materials synthesis and processing and laboratory characterization of chemicals and materials including crystal growth, film deposition, wet chemistry (organic-inorganic and biochemistry) and dry synthesis techniques, glove box techniques, vacuum techniques, chemical fume hoods, instrumentation for analysis and characterization, and scientific tools to support the research. The building would also support application and validation/adaption of bench-scale methodology that extend applications for all science and engineering themes. Imaging (for example, microscopy techniques) and analytical characterization tools (for example, magnetic characterization, UV-Raman) would support the research efforts.

Computer-based methods will also support computational materials science and chemistry, as well as imaging.

The multiple story facility will connect to existing utilities around the facility. We anticipate the standard utility connections: domestic water, laboratory and sanitary sewer, site electrical grid, and natural gas. The detailed connections and locations will be finalized in the detailed design process. At this time the use of steam is not determined but the decision will be made at the final design.

The initial work at the site will execute demolition of existing parking lots which will generate recyclable materials. Excavated materials from the building foundation will generate available

backfill materials to prepare for the relocated parking areas, berms and other surface structures. Topsoil from the site and existing excess topsoil will be stored, pulverized, and used to provide the final cover on the site grounds.

The stormwater from the site will be managed and controlled. Clean stormwater from the building roofs will be guided into progressive management units such as grass swales, rain gardens, and bio-swales to encourage the maximum absorption into the ground. Existing parking areas will supplement the necessary relocated parking areas where the building and quadrangle will be constructed. The stormwater from the parking areas that is not absorbed would be guided to new or existing stormwater management units. Other measures such as porous asphalt may be included in the design to reduce the peak discharges from the site and allow for maximum detention and filtering of stormwater.

II. **(?)Description of Affected Environment:**

The multiple story facility will be constructed on a combined developed and undeveloped site at Argonne National Laboratory. The building will be constructed on an existing parking lot located on the northern portion of the site. Existing stormwater control systems managing asphalt surface runoff and sheet flow will be modified to use existing detention systems and improve the stormwater releases of the area. No sensitive environmental areas will be impacted by the construction of the facility.

III. **(?)Potential Environmental Effects:** (Attach explanation for each "yes" response. **See Instructions for Completing Environmental Review Form)**

A. Complete Section A for all projects.

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. Yes X No ____
   The project has been registered for LEEDS Gold accreditation.

2. (?)Air Pollutant Emissions Yes X No ____
   Minor emissions from cars, light-duty vehicles, and larger earth-moving equipment will occur during construction. The selection of an emergency generator may trigger the need for an air permit. Any new emergency generator must meet the current Tier level emission limits as required by federal regulations. If a new permit is required additional NEPA coverage is also required.

   Research emissions may emit low levels of hazardous air pollutants or criteria pollutants (i.e., ozone, carbon monoxide, suspended solids, sulfur dioxide, lead, nitrogen oxide as defined by the Clean Air Act. Given the limited quantities of materials used in bench-scale activities (see item 4 below, Chemical Storage/Use") such emissions would not have a significant impact on the environment. Any research activities involving the use of chemicals in excess of the quantities cited in Item 4 must be coordinated with ESQ Environmental Compliance prior to the start in order to evaluate the potential impact to the environment, the need to conform to applicable air emissions regulations, and to determine if additional NEPA documentation is required. Research activities involving radionuclide air emissions must also coordinate with ESQ Environmental Compliance prior to the start of work. This ERF does cover radiological emission and any emissions will be documented and reported in accordance with US EPA NESHAPS Regulations A IEPA

Construction Permit will be required if radionuclide emissions are generated. The development of research concepts by scaling up to pilot scale is not covered by this ERF.

3. (?)Noise — Yes X No ____

Construction-type noises will be generated during the construction phase of this project. Excessive noises that would disturb the surrounding buildings are not expected. Large excavation equipment will be operating in the area. Some jack-hammering could be expected. Multiple repetitive noises such as hammering, banging is possible. The activities will follow the appropriate standards in the applicable Argonne hearing protection procedures including any required PPE.

Excessive noise is not expected in the operations of the facility.

4. (?)Chemical/Oil Storage/Use — Yes X No ____

Standard construction and operational chemicals will be used on site. Construction industry chemicals such as grease, gasoline, and oil will be used. The materials shall have the appropriate MSDSs and be stored in proper containers and protected from spillage. In addition, an emergency cleanup plan and the construction SWPPP plan shall be in place in case of accidental releases. Oils will be managed during construction in accordance with Argonne's Spill Prevention, Control, and Countermeasures (SPCC) Plan. Upon completion of the project the building will be incorporated into the site-wide Stormwater Pollution Prevention Plan (SWPPP) and SPCC program.

Operational use of chemicals will be typical of current R&D laboratories and conventional laboratory operations including radioactive materials. The work will follow the requirements of the storage/use requirements in the applicable Argonne procedures. The amount of chemicals used in a single experiment, measurement or test will generally limited to 5 gallons of hazardous liquid and 5 pounds of hazardous solid. The storage and use of extremely hazardous chemicals (40 CR 355) will be limited to 1 pound of any single chemical. The production, acquisition, storage or use of chemicals will follow the requirements on Hazardous Materials, Flammable and Combustible Liquids, and Compressed Gases in the applicable LMS or ESH procedures.

5. (?)Pesticide Use — Yes X No ____

During the establishment and maintenance of the planting on the work site, herbicides and pesticides may be used to assist in the establishment of the permanent vegetation. Licensed applicators will be used for this work.

6. (?) Polychlorinated Biphenyls (PCBs) — Yes X No ____

Construction and maintenance activities are not expected to use PCB materials.

Research activities may involve the use of PCBs and will follow the appropriate LMS procedures and the applicable Work Planning and Control processes for shipping, receiving, use, storage, and disposal. Coordinate with ESQ-EC to evaluate the PCB research and development requirements under the TSCA regulations.

7. (?) Biohazards — Yes X No ____

Biosafety Level 1 and 2 materials will be compliant with all applicable federal and state regulations governing the possession, transfer and use of this type of material including the Institutional Biosafety Committee confirmation of the containment level, its review for use, storage and disposal. The National Institutes of Health define bench scale as not production scale and using less than 10 liters of culture. The proposed research must also follow the guidelines in the Argonne Biohazard Control Program Manual and the requirements in ARGPOL-7.7, Biological Safety Policy. Biosafety Level 3 is not covered by this ERF. Work at this level would require additional NEPA coverage. Biosafety Level 4 work will not be allowed on site under DOE Draft Directive P 434.X.

8. (?)Liquid Effluent (wastewater) — Yes X No ____

Redundant retention tanks will be constructed to collect liquid effluent from radiological laboratories. Construction stormwater will be managed in accordance with the IEPA Stormwater Pollution Prevention Plan (SWPPP) and the Notice of Intent (NOI). Upon completion of the project the building will be incorporated into the site-wide Stormwater Pollution Prevention Plan (SWPPP), which includes requirements for green stormwater management systems.

This facility is a standard office and research facility. It will house both mechanical equipment that requires cooling, experimental facilities/laboratories that will discharge fluids, and personnel working in an office and lab environment. Wastewater discharges will be generated and sent as appropriate to the Argonne National Laboratory's sanitary or laboratory wastewater treatment plants. Since the majority of the building occupants are expected to be existing Argonne employees, net loading of the Argonne sewer systems is not anticipated, and modification of the Argonne NPDES permit is not expected. However, the project will require a sanitary and laboratory sewer IEPA "permit-to-connect", which requires a minimum three month IEPA review period. No process or sanitary sewer water shall be discharged to the stormwater system. Operational discharges from the laboratories will follow the appropriate Argonne standards. Operational stormwater will be managed where practical on the Argonne property through progressive management units such as bioswales, retention ponds, and bioswales. The stormwater management plan would include LEEDS criteria and incorporate the constructed management units.

9. (?)Waste Management

a) Construction or Demolition Waste — Yes X No ____

During the construction of the facility, there will be extensive construction debris and standard waste generated. Per the requirements in LEEDS, the project will establish trash collection areas where all debris can be sorted and recycled materials placed in appropriate containers. Excavated materials such as asphalt, gravel, concrete, will be recycled off site by the construction contractor.

b) Hazardous Waste — Yes X No ____

During the operation of the facility, hazardous waste could be generated. These wastes will be managed via the requirements of

the Argonne National Laboratory's Waste Handling Procedures (WASTE 3.3).

c) Radioactive Mixed Waste — Yes X No ____
During the operation of the facility, hazardous waste could be generated. These wastes will be managed via the requirements of the Argonne National Laboratory's Waste Handling Procedures Manual.

d) Radioactive Waste — Yes X No ____
During the operation of the facility, hazardous waste could be generated. These wastes will be managed via the requirements of the Argonne National Laboratory's Waste Handling Procedures Manual.

e) PCB or Asbestos Waste — Yes ____ No X
None expected.

f) Biological Waste — Yes X No ____
There is a potential for the generation of BSL 1&2 waste which will be disposed of in compliance with IEPA and CDC regulatory requirements.

g) No Path to Disposal Waste — Yes ____ No X

h) Nanomaterial Waste — Yes X No ____
The proposed activities may generate nanomaterial waste. The waste will be accumulated, managed and documented in accordance with the requirements outlined in WASTE-3.3 (Hazardous Wastes-Disposal Procedures) which describes how to plan and handle project waste, and WASTE-5.4 (Special Guidelines-Management and Packaging of Engineered Nanomaterials for Disposition); and the successor LMS laboratory-wide documents with equivalent content. Personnel who generate waste and those who prepare waste requisitions are required to complete the required nanomaterial orientation training in accordance with the requirements outlined in applicable LMS procedures.

10. (?)Radiation — Yes X No ____
Construction and maintenance activities may involve the use and storage of radiation devices (e.g., soil strength detectors and non-destructive testing equipment). This equipment will be used by properly trained personnel.

There is a potential to use radiological materials in small quantities including radionuclides relevant for heavy element chemistry and separation science at quantities below Haz Cat 3 levels and sealed radioactive sources for experiments and calibration of equipment. During the operation of the facility, radiation generating instruments (e.g., X-ray diffraction machines, electron microscopes, and other machine-based sources of radiation) could be utilized. All work will be performed following the appropriate Argonne radiation safety and transportation regulations to ensure safety and to make certain that radiological inventories are properly managed and that radiation exposures are reduced to levels that are as low as reasonably achievable (ALARA).

11. (?)Threatened Violation of ES&H Regulations or Permit Requirements — Yes ___ No X

12. (?)New or Modified Federal or State Permits — Yes X No ___

Since the site is larger than 1 acre, a construction SWPPP and NOI are required to control the flow of stormwater and prevent erosion. This is a permit required from the Illinois EPA and it must be received before the project begins. We may need a modification of our NPDES permit to reflect the addition of sources to our existing stormwater, laboratory and sanitary sewer systems. The SWPPP includes an erosion control measures which is required during the construction phase of the project. Upon completion of the project the building will be incorporated into the site-wide Stormwater Pollution Prevention Plan (SWPPP).

An air permit may be required depending on the size of the emergency generator selected. If the unit is larger than 1500 hp, a construction permit will be required for that equipment.

Steam use for the building was calculated to evaluate the effects on the Central Heating Plant emissions. Under the Prevention of Significant Deterioration/New Source Review (PSD/NSR) requirements emission increases in excess of threshold levels are required to obtain a PSD/NSR permit, which can take a year or more and involve significant cost in modeling and preparation. The evaluation showed there would a minor increase of air emissions (see attached calculation). This FMS program will evaluate new construction and demolition of existing buildings so the final increase or decrease in emissions can be determined. The calculations require that total net emission changes be evaluated over a five-year period. The regulations also require that projects that have a "reasonable possibility" to emit 50% of the threshold limits must be documented (PSD/NSR thresholds: CO 100, PM 15, NOX40, SO2 40, VOC 40, tons/yr). If other heating sources are considered such as natural gas an analysis of requirements would be required.

A construction permit from the Illinois EPA will be required for all activities involved with emissions of radionuclides, including all bench scale research work.

13. (?)Siting, Construction, or Major Modification of Facility to Recover, Treat, Store, or Dispose of Waste — Yes ___ No X

14. (?)Public Controversy — Yes ___ No X

15. (?)Historic Structures and Objects — Yes X No ___

The project area is located in the Argonne Main Campus Historic District and therefore consultation is required with the Illinois Historic Preservation Agency. The process will be completed before construction begins. We have consulted with the Illinois Historic Preservation Agency on the long term plans that the Laboratory has for the 200 area. The extension of the campus quadrangle south by future projects will affect the Main Campus Historical District.

16. (?)Disturbance of Pre-existing Contamination — Yes ___ No X

17. (?)Energy Efficiency, Resource Conserving, and Sustainable Design Features — Yes X No ____

Argonne will seek LEEDs Gold certification for the facility. The latest modern energy saving systems, components, part, and materials will be used to attain that level. In addition, the planned process of constructing the facility to combine related departments now scattered about the Laboratory will eliminate driving between facilities. The new MDL facility is expected to reduce energy use from the existing legacy facilities that it is replacing and the legacy facilities will be demolished once the MDL Facility is completed. Many sustainable design features may be used such as energy efficient lights and windows, and porous asphalt.

B. For projects that will occur outdoors, complete Section B as well as Section A.

18. (?)Threatened or Endangered Species, Critical Habitats, and/or other Protected Species — Yes ____ No X

19. (?)Wetlands — Yes ____ No X

There are no wetlands in the construction area of the site set aside for the MDL facility. However, adjacent to the site to the northeast is a small stormwater swale with some wetland characteristics which will be protected during the construction. If this area is modified or removed in the future it will require a DOE determination and new NEPA coverage.

20. (?)Floodplain — Yes ____ No X

21. (?)Landscaping — Yes X No ____

With the construction of the facility, the existing landscape will be completely removed. Some large native hardwoods exist on the periphery of the site. These trees will be saved where practical.

Native trees and shrubs will be designed into the landscape plan as part of the project. Native deep rooted grass species may be planted where appropriate in bioswales, and other stormwater infiltration units. Native vegetation is preferred based on its drought tolerance, erosion control features and low maintenance.

22. (?)Navigable Air Space — Yes ____ No X

23. (?)Clearing or Excavation — Yes X No ____

The MDL site will be geotechnically investigated to determine soil strength characteristics. Typical testing techniques will include soil borings and laboratory testing of soil samples. These activites result in small amounts of soil removed from the site. The construction of the facility will result in an extensive amount of excavation activities. The entire site is approximately 3 acres (2 building, 1 parking structure). Not all the site will see extensive excavation activities. The building foot print will be about .9 acres and the parking structure will be about .7 acres. The removal of the existing parking lot, new parking lot installations, utility installations, and the establishment of the northern section of the campus quadrangle will cover the remaining acreage. The volume of excavated materials is estimated at 10,000 CY. However, much of the excavated topsoil and clay materials will be recycled on the

site. Asphalt and concrete will be recycled off site. Gravel not recycled on the work site will be stored in the Laboratory's gravel storage area. Most likely, additional topsoil from the Laboratory's soil storage pile will be used. The site in general is an open asphalt parking lot and grass covered area. Scattered trees exist on the site. Most trees in the area will be removed. However, large native trees will be saved where practical. The building will be incorporated into the site wide Stormwater Pollution Prevention Protection Plan.

24. (?)Archaeological Resources — Yes X No ____
Much of the project area has been previously disturbed. A parking lot presently occupies much of the site. In addition, an existing road covers part of the site. The Illinois Historic Preservation Agency (IHPA) reviewed and concurred with our assessment that the proposed excavation of the site did not require additional fieldwork and that the project can proceed. However, northeast of the site southwest of the intersection of 94th Street and Northgate, a section of land appears not to be disturbed. It may be disturbed during the construction of some of the buildings in the area. Therefore a Cultural Resources Survey shall be executed to investigate the area. The IHPA and Argonne records indicate that portions of the project area require investigation for historic properties. A survey of these areas will be performed before any excavation occurs in this area. The IHPA must review and approve the survey results before the project can proceed. Prior to the start of detailed design, this survey should be completed.

25. (?)Underground Injection — Yes ____ No X

26. (?)Underground Storage Tanks — Yes ____ No X

27. (?)Public Utilities or Services — Yes ____ No X

28. (?)Depletion of a Non-Renewable Resource — Yes ____ No X

C. For projects occurring outside of ANL complete Section C as well as Sections A and B.

29. (?)Prime, Unique, or Locally Important Farmland — Yes ____ No ____

30. (?)Special Sources of Groundwater (such as sole source aquifer) — Yes ____ No ____

31. (?)Coastal Zones — Yes ____ No ____

32. (?)Areas with Special National Designations (such as National Forests, Parks, or Trails) — Yes ____ No ____

33. (?)Action of a State Agency in a State with NEPA-type Law — Yes ____ No ____

34. (?)Class I Air Quality Control Region — Yes ____ No ____

IV. Subpart D Determination: (to be completed by DOE/ASO)

Are there any extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal? — Yes ____ No X

Is the project connected to other actions with potentially significant impacts or related to other proposed action with cumulatively significant impacts? Yes ___ No X

If yes, is a categorical exclusion determination precluded by 40 CFR 1506.1 or 10 CFR 1021.211? Yes ___ No ___

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? Yes X No ___

If yes, indicate the class or classes of action from Appendix A or B of Subpart D under which the project may be excluded. Appendix B. 6 Siting/construction/operation/ decommissioning of facilities for bench-scale research, conventional

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. laboratory operations, small-scale research and development and pilot projects.

ASO NEPA Coordinator Review: Kaushik N. Joshi

Signature: KNJoshi Date: 5-9-11

ASO NCO Approval of CX Determination:

The preceding pages are a record of documentation that an action may be categorically excluded from further NEPA review under DOE NEPA Regulation 10 CFR Part 1021.400. I have determined that the proposed action meets the requirements for the Categorical Exclusion identified above.

Signature: Peter R. Siebach Date: 5/9/11

Peter R. Siebach
Acting Argonne Site Office NCO

ASO NCO EA or EIS Recommendation:

Class of Action: _____

Signature: _____ Date: _____

Peter R. Siebach
Acting Argonne Site Office NCO

Concurrence with EA or EIS Recommendation:

CH GLD: _____

Signature: _____ Date: _____

ASO Manager Approval of EA or EIS Recommendation:

An ___ EA ___ EIS shall be prepared for the proposed _____ and

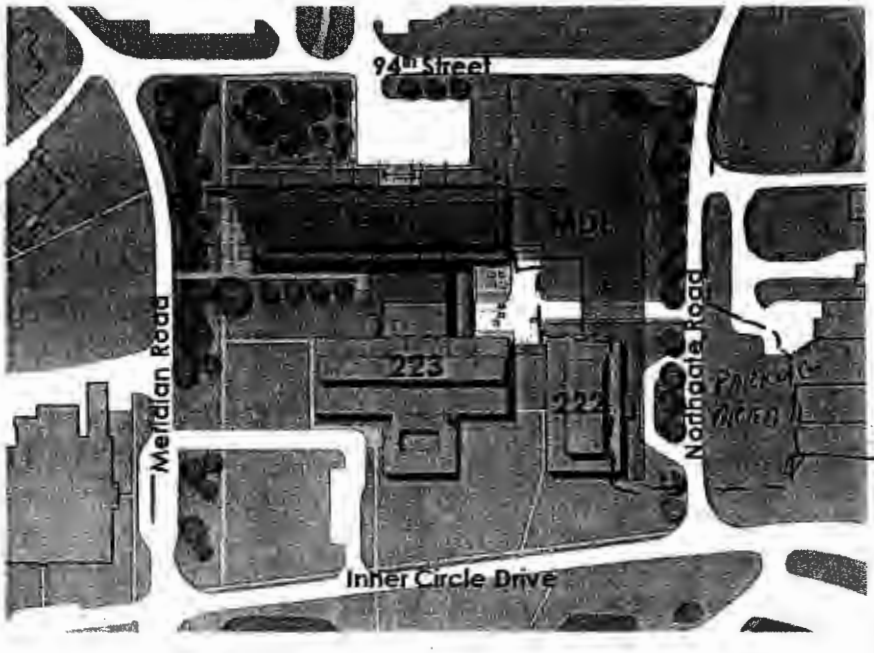
_____ shall serve as the document manager.

Signature: _____ Date: _____

Dr. Joanna M. Livengood
Manager

Site Map

Site Plan – Energy Sciences Quad



HDR