Department of Energy
Fermi Site Office
Post Office Box 2000
Batavia, Illinois 60510

March 20, 2018

Ms. Martha E. Michels
Chief Safety Officer
Fermilab
P.O. Box 500
Batavia, IL 60510

Dear Ms. Michels:

SUBJECT: NATIONAL ENVIRONMENTAL POLICY ACT DETERMINATION AT FERMI NATIONAL ACCELERATOR LABORATORY – MONITORING WELL AND PIEZOMETER INSTALLATION FOR THE BOOSTER NEUTRINO BEAM

Reference: Letter, from M. Michels to R. Hersemann, dated March 13, 2018, Subject: National Environmental Policy Act Environmental Evaluation Notification Form for Monitoring Well and Piezometer Installation for the Booster Neutrino Beam

The Fermi Site Office (FSO) has reviewed the National Environmental Policy Act (NEPA) Environmental Evaluation Notification Form (EENF) for Monitoring Well and Piezometer Installation for the Booster Neutrino Beam. Based on the information provided in the EENF, the following categorical exclusion (CX) is approved:

Project Name	Approved	CX
Monitoring Well and Piezometer Installation for the Booster Neutrino Beam	3/15/2018	B3.1

Enclosed is signed copy of the EENF for your records. No further NEPA review is required. This project falls under categorical exclusions provided in 10 *CFR* 1021, as amended in November 2011.

Sincerely,

Michael J. Weis
Site Manager

Enclosure:
As Stated

cc: N. Lockyer, w/o encl.
J. Lykken, w/o encl.
T. Meyer, w/o encl.
B. Iverson, w/o encl.
T. Dykhuis, w/encl.

FERMILAB ENVIRONMENTAL EVALUATION NOTIFICATION FORM (EENF) for documenting compliance with the National Environmental Policy Act (NEPA), DOE NEPA Implementing Regulations, and the DOE NEPA Compliance Program of DOE Policy 451.1

Project/Activity Title: Monitoring Well and Piezometer Installation for the Booster Neutrino Beam (BNB)
ES&H Tracking Number: 01145

I hereby verify, via my signature, the accuracy of information in the area of my contribution for this document and that every effort would be made throughout this action to comply with the commitments made in this document and to pursue cost-effective pollution prevention opportunities. Pollution prevention (source reduction and other practices that eliminate or reduce the creation of pollutants) is recognized as a good business practice which would enhance site operations thereby enabling Fermilab to accomplish its mission, achieve environmental compliance, reduce risks to health and the environment, and prevent or minimize future Department of Energy (DOE) legacy wastes.

Fermilab Action Owner: Chris Greer (X4847)
Signature and Date Chris Greer 3/13/18

I. Description of the Proposed Action and Need

Purpose and Need:
The purpose of this activity is to perform a phased installation of monitoring wells and piezometers and it is needed to better understand the subsurface conditions in the vicinity of the BNB site. The borehole characterization and well/piezometer installation work would identify and document representative subsurface conditions in a detailed installation report. The work would sample and classify the soil strata, install groundwater monitoring wells (for future sampling and hydraulic testing) and install piezometers to locate the elevation of groundwater. The data and installations would provide the groundwater geologist with a hydrogeologic basis to evaluate the lateral infiltration toward and migration potential away from the BNB decay pipe liner system.

Proposed Action:
The onsite work would involve the installation of up to seventeen (17) monitoring wells or piezometers as indicated in the Appendix. The wells or piezometers would be screened to the suggested depths below existing grade as follows:

Phase 1:
S-1552 to S-1559: 5-15 feet (vertical; 3 wells, 5 piezometers)
S-1560 to S-1563: 33 feet (4 vertical wells)
Phase 2a:
S-1564 & S-1565: 55 feet (2 vertical wells)
Phase 2b:
S-1566 & S-1567: 55 feet (1 or 2 horizontal wells)
Phase 3:
S-1568: 70 feet (1 vertical well)

Wells would be installed to the depths listed above unless refusal is encountered at a shallower depth or target deposits exist at that location at an alternate depth.

Soil samples would be collected from each borehole in order to perform the depositional field descriptions and evaluations required. A formal report describing the nature and results of the work performed would be submitted upon completion of all field work. The report would describe all phases of the field investigation and include copies of soil borehole and/or rock logs and well construction diagrams.

Alternatives Considered:
This project would allow for the examination of the area surrounding BNB to evaluate lateral volumetric infiltration into the decay pipe liner system and to evaluate the potential for migration of tritiated water away from the decay pipe liner system. Depths and volume estimates of lateral infiltration are needed to assess infiltration mitigation solutions and migration potential is needed to assess risk to groundwater resources. A No Action alternative would not fulfill the need, and would leave designers of infiltration mitigation measures with inadequate data to either prepare a successful design, or understand potential impacts to water resources.

II. Description of the Affected Environment

This investigation would take place over a total area of approximately 2 acres; however, the total impacted area is less than 1 acre. It is a routine drilling operation, and there is no planned effluent.

III. Potential Environmental Effects (If the answer to the questions below is "yes", provide comments for each checked item and where clarification is necessary.)

A. Sensitive Resources: Would the proposed action result in changes and/or disturbances to any of the following resources?

- ☐ Threatened or endangered species
- ☐ Other protected species
- ☐ Wetland/Floodplains
- ☐ Archaeological or historical resources
- ☐ Non-attainment areas

B. Regulated Substances/Activities: Would the proposed action involve any of the following regulated substances or activities?

- ☒ Clearing or Excavation
- ☐ Demolition or decommissioning
- ☐ Asbestos removal
- ☐ PCBs
- ☐ Chemical use or storage
- ☐ Pesticides
- ☒ Air emissions
- ☐ Liquid effluents
- ☐ Underground storage tanks
- ☐ Hazardous or other regulated waste (including radioactive or mixed)
- ☐ Radioactive exposures or radioactive emissions
- ☐ Radioactivation of soil or groundwater

C. Other Relevant Disclosures: Would the proposed action involve any of the following actions/disclosures?

- ☐ Threatened violation of ES&H permit requirements
- ☐ Siting/construction/major modification of waste recovery or TSD facilities
- ☒ Disturbance of pre-existing contamination
- ☐ New or modified permits
- ☐ Public controversy
- ☐ Action/involvement of another federal agency
- ☒ Public utilities/services
- ☐ Depletion of a non-renewable resource

IV. Comments on checked items in section III.

Clearing and Excavation
The borehole cuttings (average of less than 1 cubic yard per borehole) would be transported to stockpiles on site. The action is less than 1 acre; therefore, a Storm Water Pollution Prevention Plan is not necessary and soil erosion control measures would not be necessary.

Air Emissions
There may be possible minor internal combustion emissions from truck mounted drill rigs.

Disturbance of pre-existing contamination
The boreholes and wells to 33-foot and greater depths would penetrate a groundwater zone that would be evaluated for the migration of tritiated water. The borehole cuttings for these boreholes would be stockpiled and then characterized based on the results of tritium analyses of groundwater samples collected from the 33-foot deep wells.

Public utilities/services
Utilities would be located via standard Fermilab methods. Borehole locations would be adjusted to avoid any existing utilities.

V. NEPA Recommendation

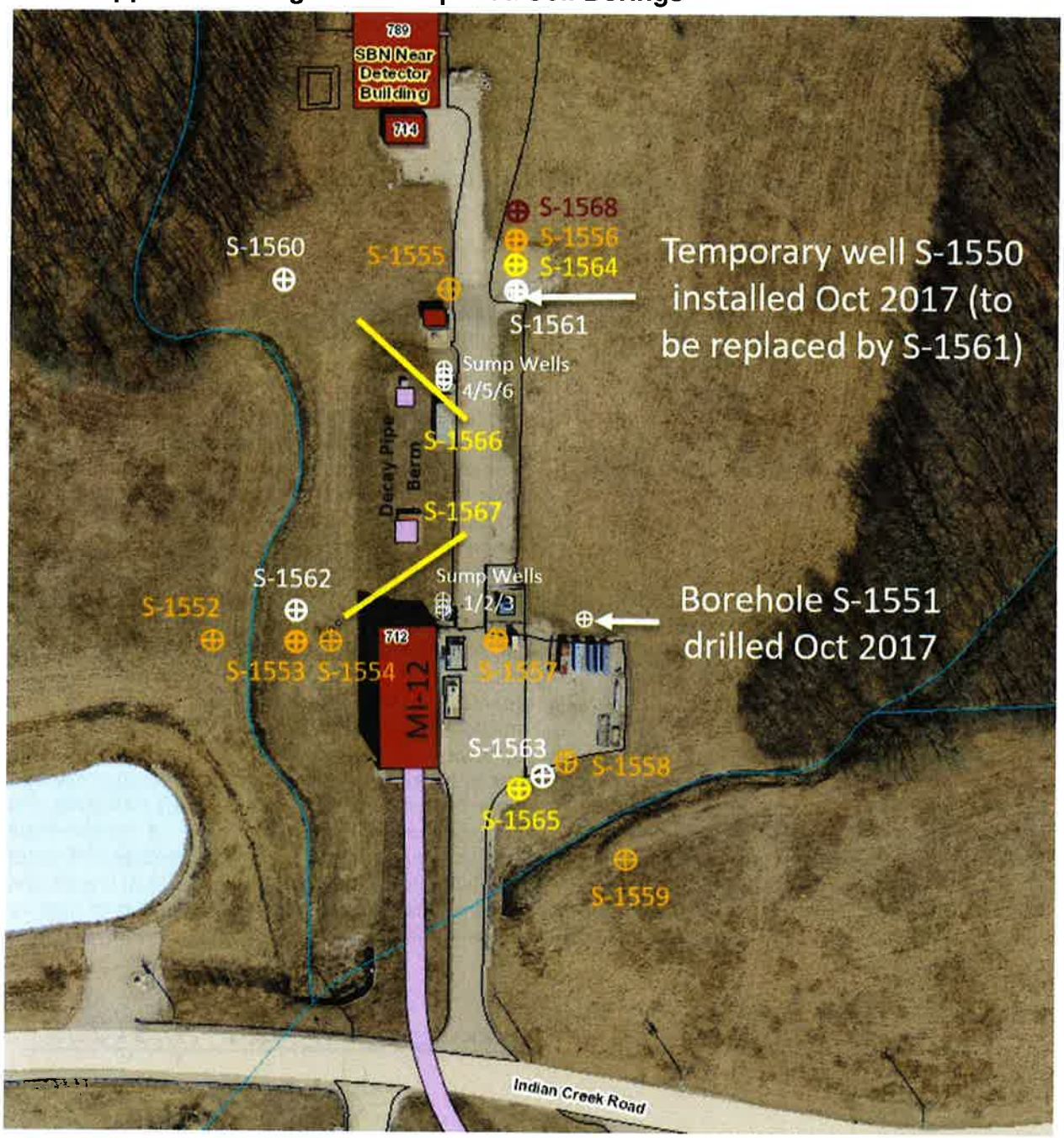
Fermilab staff has evaluated the proposed action and believe a Categorical Exclusion is appropriate. It is believed that the proposed action meets the description found in DOE's NEPA Implementation Procedures, 10 CFR 1021, Subpart D, Appendix B3.1.

B3.1 Site characterization and environmental monitoring, (including but not limited to siting, construction, modification, operation, and dismantlement and removal or otherwise proper closure (such as of a well) of characterization and monitoring devices, and siting, construction, and associated operation of a small-scale laboratory building or renovation of a room in an existing building for sample analysis). Such activities would be designed in conformance with applicable requirements and use best management practices to limit the potential effects of any resultant ground disturbance. Covered activities include, but are not limited to, site characterization and environmental monitoring under CERCLA and RCRA. (This class of actions excludes activities in aquatic environments. See B3.16 of this appendix for such activities.) Specific activities include, but are not limited to: (a) Geological, geophysical (such as gravity, magnetic, electrical, seismic, radar, and temperature gradient), geochemical, and engineering surveys and mapping, and the establishment of survey marks. Seismic techniques would not include large-scale reflection or refraction testing; (b) Installation and operation of field instruments (such as stream-gauging stations or flow-measuring devices, telemetry systems, geochemical monitoring tools, and geophysical exploration tools); (c) Drilling of wells for sampling or monitoring of groundwater or the vadose (unsaturated) zone, well logging, and installation of water-level recording devices in wells; (d) Aquifer and underground reservoir response testing; (e) Installation and operation of ambient air monitoring equipment; (f) Sampling and characterization of water, soil, rock, or contaminants (such as drilling using truck- or mobile-scale equipment, and modification, use, and plugging or boreholes); (g) Sampling and characterization of water effluents, air emissions, or solid waste streams; (h) Installation and operation of meteorological towers and associated activities (such as assessment of potential wind energy resources); (i) Sampling of flora or fauna; and (j) Archeological, historic, and cultural resource identification in compliance with 36 CFR part 800 and 43 CFR part 7.

Fermilab NEPA Program Manager: Teri L. Dykhuis
Signature and Date Teri L. Dykhuis 3/13/2018

VI. DOE/Fermi Site Office (FSO) NEPA Review

Based upon my review of information conveyed to me and in my possession concerning the proposed action, as NEPA Compliance Officer (as authorized under DOE Policy 451.1), I have determined that the proposed action fits within the specified class of actions, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

FSO NEPA Compliance Officer: Rick Hersemann
Signature and Date Rick Hersemann 3/15/2018

VII. Appendix – Diagram of Proposed Soil Borings