



# Environmental Assessment

## Clinical Alpha Radionuclide Producer

Jennifer Higbie

Environmental Protection Division

November 9, 2023



# The NEPA Process

## Project conceived

- Detail must be sufficient enough to describe what is going to be done.

## Environmental Evaluation Notification Form

- Checklist of all potential impacts associated with project
- Determination
  - Categorical Exclusion (CX) – project proceeds or
  - Environmental Assessment

## Environmental Assessment prepared

- Finding of No Significant Impact – project proceeds or
- Determination of need for an Environmental Impact Statement

# Environmental Assessment (EA)

## Purpose/Need:

The purpose of the Clinical Alpha Radionuclide Producer (CARP) is to deliver a fully functional at minimum Hazard Category 3 facility at BNL including hot cells and associated equipment for processing and handling waste that meets the guidelines for use in humans.

The CARP is necessary to enable the production demand that is projected for the nation as well as furthering research efforts. This will allow advancement of our understanding of nuclear and radiochemistry; further fundamental science and technological innovations; and advance isotope production.

# Alternatives Evaluated

## Alternative 1 (Preferred) – Conversion of Building 870 for Radioisotope Production

Facility modification and upgrades addressed in this EA include:

- Replace entire building HVAC system
- Construct hot cells and install shielded viewing windows, manipulators, and glove boxes
- Install exhaust fans, HEPA / HEGA filter bank enclosure, exhaust stacks, and acid scrubber system
- Replace entire building electrical system
- Install new building controls and security system
- Upgrade the existing fire detection / suppression system
- Install target cask/carriage frame and clamshell/port door
- Fill-in the loading dock and close the open wall to house mechanical equipment
- Exterior improvements include:
  - New building for external air filtration system
  - New utility connections for electricity, fire, water, sewer, and communications
  - New standby electric generator



# Alternatives Evaluated

## Alternative 2 – No Action

The No Action Alternative would maintain the current conditions and operations of the radio-isotope production program. The isotope production program mission would continue for the foreseeable future, and in addition to the routine maintenance and modifications of facilities and equipment, could include the development of facility upgrades within the Isotope Production program facilities. No additional ground disturbance would be expected under the No Action alternative.

# Alternatives Evaluated

## Alternative 3 – Development and Construction of New Facility

Alternative three would add an entirely new facility within the Waste Management complex, with the new building located just to the north of Building 870. The new facility would be approximately 4,000 square feet, be designed specifically for radioisotope production, and have similar features as those proposed under Alternative 1.

# Location



Waste Management Complex, building 870 (left-center at arrow).

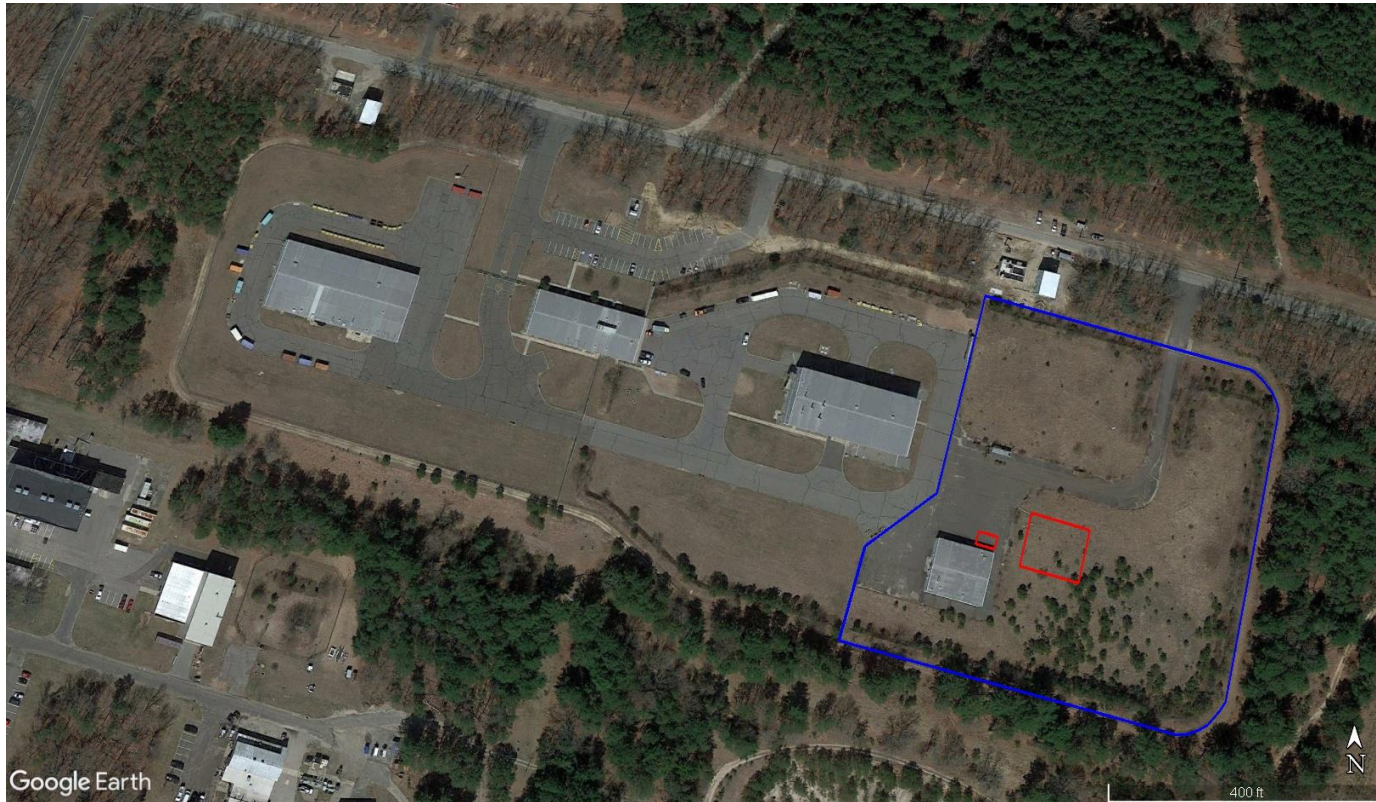


1. Relativistic Heavy Ion Collider
2. NASA Space Radiation Laboratory
3. Alternating Gradient Synchrotron
4. Alternating Gradient Synchrotron Booster
5. LINAC -and Brookhaven LINAC Isotope Producer
6. Tandem to Booster Tunnel
7. Interdisciplinary Science Building

8. Center for Functional Nanomaterials
9. National Synchrotron Light Source II
10. Computational Science Initiative
11. Tandem Van de Graaff and Cyclotron
12. Accelerator Test Facilities
13. Isotope Research Laboratories
14. Waste Management Complex



# Facility



Location of Bldg. 870 (Alternative 1) with ancillary building for air handling, and potential new construction (Alternative 3) large red rectangle.



Building 870





# Assessment

## Topics Addressed in EA

### Topics Addressed in EA

- Ecology
  - Vegetation
  - Invasive Species
  - Threatened and Endangered Species
  - Migratory Birds
  - Mammals
  - Reptiles & Amphibians
  - Fish
- Water
  - Surface water – wetlands, scenic river
  - Groundwater
- Land Use, Demography, Social Justice
- Socioeconomic
- **Transportation**

- Cultural Resources and Parks
- Air Quality
- Climate
- Visual Quality
- Noise
- Industrial Safety & Occupational Health
- **Radiological Characteristics**
- Natural Hazards
- **Destructive Acts**
- Utilities
- **Waste Management/Pollution Prevention**
- Commitment of Resources
- Decommissioning & Restoration

# Transportation



Type A



Type B

- Onsite transportation –
  - No Action - current transportation requirements are for Type A/below HazCat 3.
    - Plans in place for increased Ac-225 production requiring use of Type B/Below HazCat3
  - Preferred (Alt. 1) and Alt. 3
    - CARP would be HazCat3 facility
    - Also Require use of Type B/Above HazCat 3 movements
    - Program documents must be updated – new documents, developing QAP in compliance with 10 CFR 71 Subpart H, update employee training
- Offsite transportation – All Alternatives
  - Use of qualified shippers meeting DOT requirements



# Radiological Characteristics

- No Action alternative – no change from existing
- Preferred (Alt. 1) and Alt. 3
  - Potential releases from Hot Cell operations
    - Facility would require application for and receipt of a NESHAPs authorization from EPA.
    - Releases mitigated through air handling systems with both HEPA and carbon filtration similar to what is used at the Bldg. 801 Isotope Processing facility.
    - Realtime monitoring in line with alarm system, routine system checks, annual reporting
    - Facility environmental monitoring (TLDs)



# Destructive Acts

- Destructive Acts include vandalism, property destruction, theft, etc.
  - No Action Alternative – no change
  - Preferred (Alt. 1) and Alt. 3 – facility would be behind fenced area with limited access through locked gates (key card access).
    - Facility would have limited access (key card)
    - Facility would have security monitoring with alarming at Central Alarm Station (Police HQ)

# Waste Management/Pollution Prevention

- No Action Alternative – continued routine waste shipments from the isotope production facility
- Preferred (Alt. 1) and Alt. 3 –
  - May increased inventory of materials resulting in the need to increase the Rad-waste facility to a Hazard Category 3 facility
  - Modified building would work toward sustainability goals
  - New building would meet US Green Building standards



# Next Steps

- Complete Draft EA – early December
- Distribute for internal comment
  - Address comments and edits
  - Prepare Draft Final EA
- Draft Final distributed to NY State
- Department of Energy prepares determination
  - Finding of No Significant Impact
  - Need to prepare Environmental Impact Statement
- Publish Determination and Final EA – target end of January 2024

# Questions?

