ATTACHMENT 2

APPROVAL OF TIME-CRITICAL ACTION MEMORANDUM FOR REMOVAL OF THE PILE FAN SUMP

Department of Energy
Brookhaven Group
Building 464
P.O. Box 5000
Upton, New York 11973

AUG 2 7 1999

Mr. Michael Schlender
Brookhaven Science Associates, LLC
Brookhaven National Laboratory
Upton, NY 11973-5000

Dear Mr. Schlender:

SUBJECT: APPROVAL OF THE PILE FAN SUMP ACTION MEMORANDUM FOR THE BROOKHAVEN GRAPHITE RESEARCH REACTOR DECOMMISSIONING PROJECT (BGRR-DP)

Reference: Letter, M. Schlender, BNL, to S. Mallette, DOE, Subject: Re-Transmittal of Action Memorandum for the Pile Fan Sump Time Critical Removal, Dated, August 12, 1999

The Department of Energy, Brookhaven Group, approves the Pile Fan Sump Action Memorandum as a time-critical removal action for immediate project execution in accordance with your FY-1999 Current Year Work Plan, subject to the following conditions:

1. BSA will complete all administrative requirements defined in the Brookhaven National Laboratory Federal Facility Agreement (Interagency Agreement), to include public notification and filing the Action Memorandum with the Administrative Record. All comments received by the Environmental Protection Agency, Region II, and the New York State Department of Environmental Conservation (NYSDEC) should be considered and dispositioned as appropriate into the Final Action Memorandum. The final Action Memorandum must be issued to the Administrative Record within 60 days of starting field work as required by CERCLA.

2. The Verification Sampling and Analysis Plan (VSAP) will be approved by DOE-BGRR Project Office and provided to the EPA and NYSDEC prior to initiating fieldwork.

3. A Readiness Assessment will be conducted, with DOE oversight, prior to initiating fieldwork.

4. A project-specific and task-specific Health and Safety Plan will be prepared and approved by BNL (for use until DOE approval of the BGRR-DP Hazard Classification and Auditable Safety Analysis, BGRR-0002) prior to initiating fieldwork.

If you have any questions regarding this letter please contact either James D. Goodenough on extension 2423 or Scott Mallette on extension 5345.

Sincerely,

George J. Malosh
Brookhaven Group Manager

cc: J. Roberts, EPG, CH
J. Goodenough, EPG, CH
E. Martinez, EPG, CH
S. Mallette, BHG
J. Meersman, BNL
S. Pulsford, BNL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
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August 31, 1999

George J. Malosh
Brookhaven Group Manager
U.S. Department of Energy
Brookhaven Group
Building 464
P.O. Box 5000
Upton, New York 11973

Re: Brookhaven National Laboratory
BGRR - Pile Fans Sump (PFS) Action Memorandum

Dear Mr. Malosh:

The U.S. Environmental Protection Agency (EPA) has reviewed the draft Action Memorandum for the Brookhaven Graphite Research Reactor Pile Fan Sump (PFS) Removal Action dated August 12, 1999. EPA's comments follow.

1. Page 7, Section III.A, 1st paragraph - This section states that there are three considerations, but lists four.

2. Page 9 - Removal actions must only meet ARARs to the extent practicable. ARARs must be attained upon completion of a selected remedy, but may not always be attained during implementation of a removal.

3. Page 10 - NYSDEC's TAGM "Remediation Guideline for Soils Contaminated with Radioactive Materials" is a TBC, not an ARAR. We have identified this in the past as an ALARA goal during implementation of the work.

4. Figure - From previous discussions, it was my understanding that there is a rather large pipe that comes from Building 801 to the PFS and then on towards the east side of Building 704. This was the subject of extensive discussion at our scoping meeting. I also recall that this pipe had potential or actual radiological contamination. At the scoping meeting DOE stated that the pipe would be capped off and EPA raised concerns with this proposal. The pipe is not shown on the figures, there is no discussion of this piping in the action memo, and DOE has failed to follow up since that scoping meeting on what will be done with this pipe. What will be done with this pipe?

5. EPA's biggest outstanding concern is how DOE will verify that the cleanup objectives have been met. When can we expect to see a sampling verification plan? It would be useful if we had sufficient time to review this plan, or at least had additional discussions, because there were numerous unresolved issues from the scoping meeting.

If you have any questions regarding this matter, please contact me at (212) 637-4321.

Sincerely,

Mary P. Logan, Remedial Project Manager
Federal Facilities Section

cc: J. Goodenough, BHO
S. Mallette, BHO
J. Lister, NYSDEC
J. Pim, SCDHS

New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials
Bureau of Radiation & Hazardous Site Management
Radiation Section, Room 402
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To JIM GOODENOUGH	From JIM LISTER
Co. DOE	Co. NYSDEC
Dept.	Phone # 518-457-3976
Fax #	Fax #

MEMORANDUM

TO: Jim Lister, P.E., Division of Environmental Remediation

FROM: Robert Rommel, Division of Solid & Hazardous Materials

SUBJECT: Comments on the BNL Action Memorandum for the PFS Removal Action

DATE: August 27, 1999

This memo details my comments on Brookhaven National Laboratory's (BNL) Action Memorandum (AM) for the Brookhaven Graphite Research Reactor (BGRR) Pile Fan Sump (PFS) Removal Action dated August 12, 1999.

1. Page 6 of the AM, Section II.A.3 includes the sentence, "an additional potential threat to public health or welfare is the exposure of personnel and the environment to contaminants in the sump and piping after the equipment is removed from service in the summer of 1999, and hence, and (sic) no longer monitored from an operational perspective." The meaning of this sentence is unclear. Section II.B.3, also on page 6, states that a Suffolk County Article 12 Compliance project is planned, which will take the PFS out of service in the autumn of 1999, and that the scope of this project will be revised to include the removal of the PFS, piping, and contaminated soil adjacent to the PFS. If this is truly the intent of the AM, then there will be no threat to the public or the environment in the autumn of 1999 since all contaminated components in the vicinity of the PFS will be removed and disposed of under the actions described in the AM. It is also unlikely that a known or suspected source of contamination, such as the PFS, would not be monitored since it is apparent that water which is allowed to accumulate in this sump can result in additional contamination of soil and groundwater. Please clarify what is meant in Section II.A.3.

2. Section III.A on page 7 cites 40 CFR 300 as the basis for the appropriateness of the Removal Action. However, the specific citation is provided as 40 CFR 300.415(b)(z). The correct citation is 40 CFR 300.415(b)(2). Please correct this reference here and on page 12 under Section XI - References. In addition, Section XI on page 12 numbers two separate items with 3, the reference to the National Oil & Hazardous Substance Pollution Contingency should be numbered with 4.

3. Section V.D on page 9 refers to a section of the National Contingency Plan (NCP) which requires that the selected remedy complies with ARARs or has obtained a waiver. The citation cited is §300.430(P)(5)(ii)(B), which does not exist. The correct citation, based on the 7-1-98 edition of 40 CFR, is contained in §300.430(e)(9)(iii)(B) which is:

§300.430 Remedial investigation/feasibility study and selection of remedy
(e) *Feasibility study*
(9) *Detailed analysis of alternatives*
(iii) *Nine criteria for evaluation*
(B) *Compliance with ARARs*

Please correct this reference.

4. On page 10, the Department's Technical Administrative Guidance Memorandum (TAGM) 4003, "Remediation of Soils Contaminated with Radioactive Materials" is listed as an action-specific ARAR. However, Section X - Recommendation on page 11 states, "this removal action also will include the associated piping and soils that may be contaminated with hazardous and radioactive materials above the cleanup levels established to limit future exposure to 15 mrem/year, to meet future land-use criterion, and to protect the groundwater." However, the exposure goal defined in TAGM 4003 is as low as reasonably achievable (ALARA) and less than 10 mrem/year above background. Therefore, if TAGM 4003 is indeed an action-specific ARAR, then this AM does not satisfy §300.430(e)(9)(iii)(B) [see comment 3].

However, TAGM 4003, which is a policy to be followed by Division of Solid & Hazardous Materials personnel, does not meet the definition of an ARAR found in §300.400(g)(4), which states, "only those state standards that are promulgated, are identified by the state in a timely manner, and are more stringent than federal requirements may be applicable or relevant and appropriate. For purposes of identification and notification of promulgated state standards, the term *promulgated* means that the standards are of general applicability and are legally enforceable." TAGM 4003 does not meet this definition since it is not a standard and is not legally enforceable. Thus, TAGM 4003 is not an ARAR.

We recommend listing TAGM 4003 as "To Be Considered" (TBC) guidance analogous to TAGM 4046, which is listed on page 10 as TBC guidance. The Record of Decision for Operable Unit I similarly lists TAGM 4003 as TBC guidance. We agree with the use of TAGM 4003 as an additional goal for remediation which will be evaluated during field excavation work as stated on page 10.

COMMENT RESOLUTION – PFS ACTION MEMO

Comment	Path Forward
NYSDEC Comments	
1. Page 6 of the AM, Section II.A.3 includes the sentence, "an additional potential threat to public health or welfare is the exposure of the personnel and the environment to contaminants in the sump and piping after the equipment is removed from service in the summer of 1999, and hence, and (sic) no longer monitored from an operational perspective." The meaning of this sentence is unclear. Section II.B.3, also on page 6, states that "a Suffolk County Article 12 Compliance project is planned, which will take the PFS out of service in the autumn of 1999, and that the scope of this project will be revised to include the removal of the PFS, piping, and contaminated soils adjacent to the PFS." If this is truly the intent of the AM, then there will be not threat to the public of the environment in the autumn of 1999 since all contaminated components in the vicinity of the PFS will be removed and disposed of under the actions described in the AM. It is also unlikely that a known or suspected source of contamination, such as the PFS, would not be monitored since it is apparent that water which allowed to accumulate in this sump can result in additional contamination of soil and groundwater. Please clarify what is meant in Section II.A.3.	The section was originally written to address worst case future 'threat of release" scenarios. The comment is correct in that this is misleading and unlikely to occur given the state of environmental monitoring and awareness at BNL. The section will be rewritten as follows: *Following the shutdown of BGRR the liquid level monitoring of the PFS was stopped at an unknown time for unknown reasons. Subsequent collection of rainwater from the 705 stack drains and the roadway above the PFS, as well as the Building 704 floor drains caused the sump to fill and overflow. This overflow condition leaked radioactively contaminated water to the adjacent soil column. This problem was discovered in 1997, the water was removed, and routine monitoring and pumping of the sump resumed. See B.1 below for additional information.*
2. Section III.A on page 7 cites 40CFR300 as the basis for the appropriateness of the Removal Action. However, the specific citation is provided as 40 CFR 300.415(b)(z). The correct citation is 40CFR300.415(b)(2). Please correct this reference here and on page 12 under Section XI – References. In addition, Section XI on page 12 numbers two separate references with item 3, the reference to the National Oil & Hazardous Substances Pollution Contingency should be numbered with 4.	Citation corrected on pages 7 and 12.
3. Section V.D on page 9 refers to a section of the National Contingency Plan (NCP) which requires that the selected remedy complies with ARARs or has obtained a waiver. The citation cited is 40CFR300.430(P)(5)(ii)(B), which does not exist. The correct citation, based on the 7-1-98 edition of 40 CFR, is contained in 40CFR300-430(e)(9)(iii)(B)..... Please correct this reference.	Citation corrected.
4. On page 10, the Department's Technical Administrative Guidance Memorandum (TAGM) 4003, "Recommendation of Soils Contaminated with Radioactive Materials" is listed as an action-specific ARAR. However, Section X – Recommendation on Page 11 states, "this removal action also will include the associated piping and soils that may be contaminated with hazardous and radioactive materials above the cleanup levels established to limit future exposure to 15 mrem/yr, to meet the future land-use criterion, and to protect	TAGM 4003 moved to a be a "To Be Considered Guidance" item.

the groundwater." However, the exposure goal defined in TAGM 4003 is as low as reasonably achievable (ALARA) and less than 10 mrem/yr above background. Therefore, if TAGM 4003 is indeed an action-specific ARAR, this this AM does not satisfy 40CFR300.430.(e)(9)(iii)(B) [see above] However, TAGM 4003, which is policy to be followed by Division of Solid & Hazardous Materials personnel, does not meet the definition of an ARAR found in 40CFR300.400(g)(4), which states, "only those state standards that are promulgated, are identified by the state in a timely manner, and are more stringent than federal requirements may be applicable or relevant and appropriate. For purposes of identification and notification of promulgated state standards, the term promulgated means that the standards are of general applicability and are legally enforceable." TAGM 4003 does not meet this definition since it is not a standard and is not legally enforceable. Thus TAGM 4003 is not an ARAR. We recommend listing TAGM 4003 as "To Be Considered" (TBC) guidance analogous to TAGM 4046, which is listed on Page 10 as TBC guidance. The Record of Decision for Operable Unit 1 similarly lists TAGM 4003 as TBC guidance. We agree with the use of TAGM 4033 as an additional goal for remediation which will be evaluated during field excavation work as stated on page 10	

EPA Comments	
1. Page 7, Section III.A, 1st paragraph – this section states that there are three considerations, but lists four.	Will be corrected
2. Page 9 – Removal action only meet ARARs to the extent practicable. ARARs must be attained upon completion of a selected remedy, but may not always be attained during implementation of a removal.	The following draft text (in italics) is provided in response. "The National Contingency Plan [1] Section 300.430 *(e)(9)(iii)(B)* requires that the selected remedy *(the decommissioning project)* attains the federal and state ARARs or obtains a waiver of an ARAR. *This removal action will meet the following ARARs to the extent practicable."*
3. Page 10, NYSDEC's TAGM "Remediation Guideline for Soils Contaminated with Radioactive Materials" is a TBC, and an ARAR. We have identified this in the past as an ALARA goal during implementation of the work.	Noted and change will be made.
4. Figure – From previous discussions, it was my understanding that there is a rather large pipe that comes from Building 801 to the PFS and then on towards the east side of Building 704. This was the subject of extensive discussion at our scoping meeting. I also recall that this pipe had potential or actual radiological contamination. At the scoping meeting DOE stated that th epipe would be capped off and EPA raised concerns with this proposal. The pipe is not shown on the figures, there is no discussion of this piping in the action memo, and DOE has failed to follow up since that scoping meeting on what will be done with this pipe. What will be done with this pipe?	Abandoning this 14" SS pipe is identified in the BNL project plan submitted to Suffolk County for replacing the PFS with a double wall pipe routed directly to Building 801. This 14" SS pipe is part of the 801 Building systems and is near an active 42" concrete duct between the PFS and building 802. Both of these lines will be included in the decommissioning of the 801 facility when both are deactivated.
5. EPA's biggest outstanding concern is how DOE will verify that the cleanup objectives have been met. When can we expect to see a sampling verification plan? It would be useful if we had sufficient time to review this plan, or at least had additional discussions, because there were numerous unresolved issues from the scoping meeting.	Sampling Program with Verification Sampling Plan will go to EPA / NYSDEC on 9/21/99

Environmental Management Directorate

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September 23, 1999

Mr. Scott Mallette
Senior Environmental Advisor
U.S. Department of Energy
Brookhaven Group, Building 464
Upton, NY 11973

Mr. James Goodenough
DOE BGRR Decommissioning Project Manager
U.S. Department of Energy
Building 701
Upton, NY 11973

Subject: Transmittal of Revision 1 of the Action Memorandum for Pile Fan Sump Time Critical Removal

Dear Messrs. Mallette and Goodenough:

The attached Action Memorandum has been updated to include the Environmental Protection Agency (EPA) and New York State Department of Environmental Conservation (NYSDEC) comments received and the results of the submittal of the Action Memo dated August 13, 1999. The regulator comment letters and comment resolution worksheet are included with this letter as well. The comment resolution worksheet has been reviewed with and agreed to by Mr. Goodenough on September 22, 1999.

The interface issues with the HFBR Suffolk County Article 12 compliance work for the stack drains have caused some re-prioritization of the PFS work. Because of the final design and interference's from the drain line intercept system in the 704 Building Fan Room #5, the removal of Fan #5 has become critical path in start the Pile Fan Sump removal work. Plans are moving forward to remove the fan and start the PFS work in about mid-October.

Please contact Stephen Pulsford at ext. 2394 if you have any questions on the attached.

Sincerely yours,

Michael Schlender

Michael Schlender
Assistant Laboratory Director
Environmental Management

Attachments (4)
Cc (w/attach):
L. Cabrera, BGRR
M. Dikeakos, DOE/BHG
E. Martinez, DOE/CH
G. Penny, DOE/BHG
C. Newson, BGRR
J. Meersman,ERD
M. Morton, BGRR
S. Pulsford, BGRR

File: WBS 1.3

ACTION MEMORANDUM
BROOKHAVEN GRAPHITE RESEARCH REACTOR
PILE FAN SUMP
REMOVAL ACTION

Revision 1

September 22, 1999

Prepared by
Brookhaven Science Associates
Brookhaven National Laboratory
BGRR Decommissioning Project
Upton, New York, 11973-5000

Prepared for
U. S. Department of Energy
Brookhaven Group
Upton, New York, 11973-5000

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I. PURPOSE

The purpose of this Action Memorandum is to document the decision by the U.S. Department of Energy (DOE) to conduct a time-critical removal action to remove the Pile Fan Sump (PFS), its associated piping, and contaminated soils adjacent to Building 801 at Brookhaven National Laboratory (BNL). This action is being taken to coincide with a modification to the system for a Suffolk County Article 12 upgrade that will take the sump out of service.

This action is being undertaken as a time-critical removal action in accordance with the Interagency Agreement among the DOE, the U.S. Environmental Protection Agency (EPA), the New York State Department of Environmental Conservation (NYSDEC), and with Suffolk County Department of Health Services under Article 12. This action will be consistent with the final remedial actions that will be documented in the Brookhaven Graphite Research Reactor (BGRR) Record of Decision. Work will be conducted in accordance with the National Contingency Plan [1] (NCP, 40 CFR 300).

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

1. Physical location

Brookhaven National Laboratory is located in Upton, Suffolk County, New York, near the geographic center of Long Island (Figure 1). The site encompasses 5,300 acres, 75 percent of which is wooded. The remainder is developed and contains office buildings, various large research facilities, and parking lots. The BNL site, formerly occupied by the U.S. Army as Camp Upton during World Wars I and II, was transferred to the Atomic Energy Commission in 1947, to the Energy Research and Development Administration in 1975, and to the Department of Energy in 1977. It has been used as a National Laboratory since 1947. The BNL site is owned by the DOE and is operated by Brookhaven Science Associates (BSA).

Brookhaven National Laboratory carries out basic and applied research in the following fields: high-energy nuclear physics and solid-state physics; fundamental material and structure properties and the interaction of matter; nuclear medicine; biomedical and environmental sciences; and, selected energy technologies. Major operating facilities include the High Flux Beam Reactor (HFBR), the Brookhaven Medical Research Reactor, the National Synchrotron Light Source, and the Alternating Gradient Synchrotron.

2. Removal Site Evaluation

This removal action concerns low-level radioactive contamination within the soils and piping associated with the PFS that supports the BGRR and the HFBR (Figure 2). The

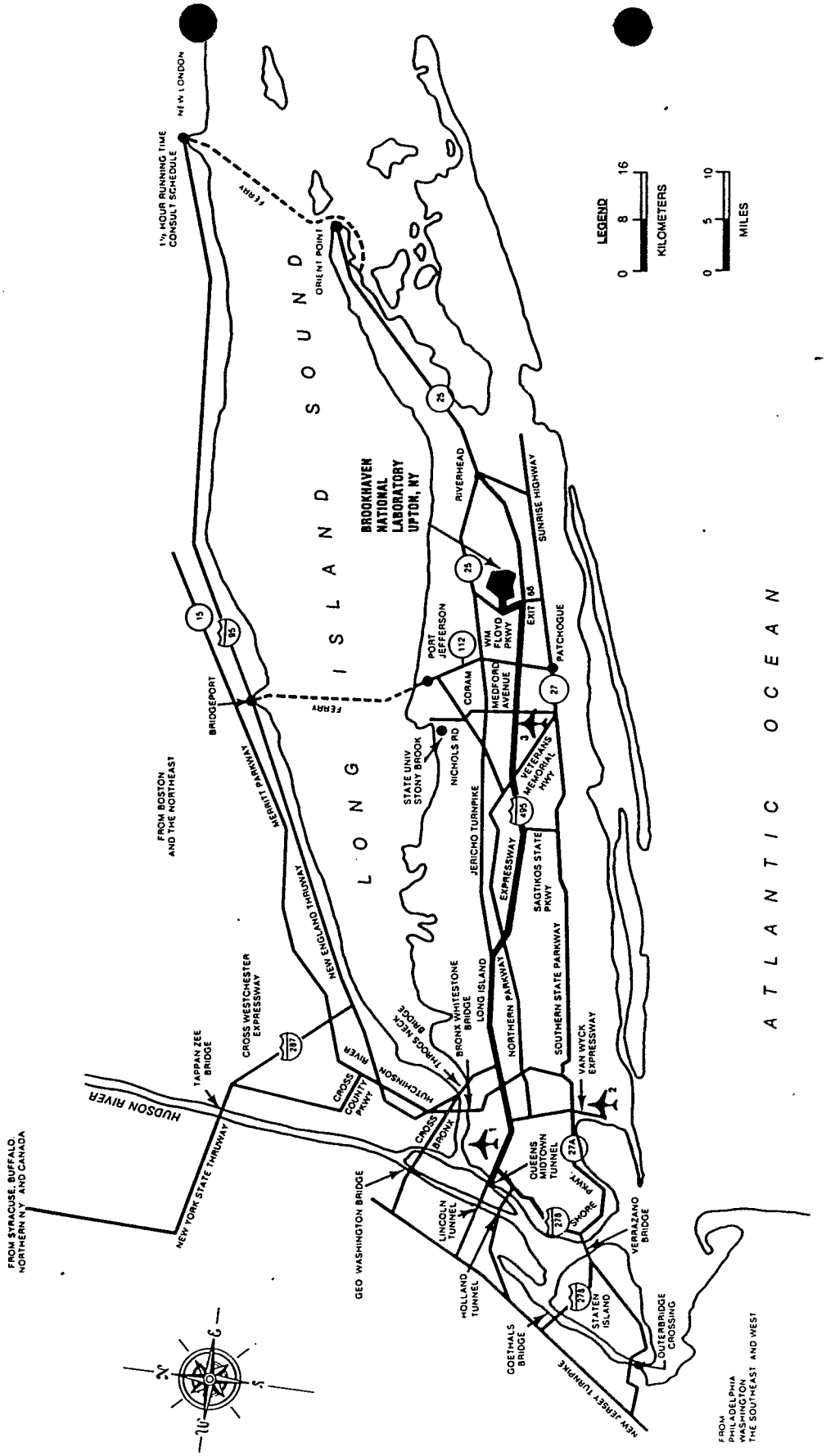

Figure 1. Brookhaven National Laboratory located in Upton, Suffolk County, New York

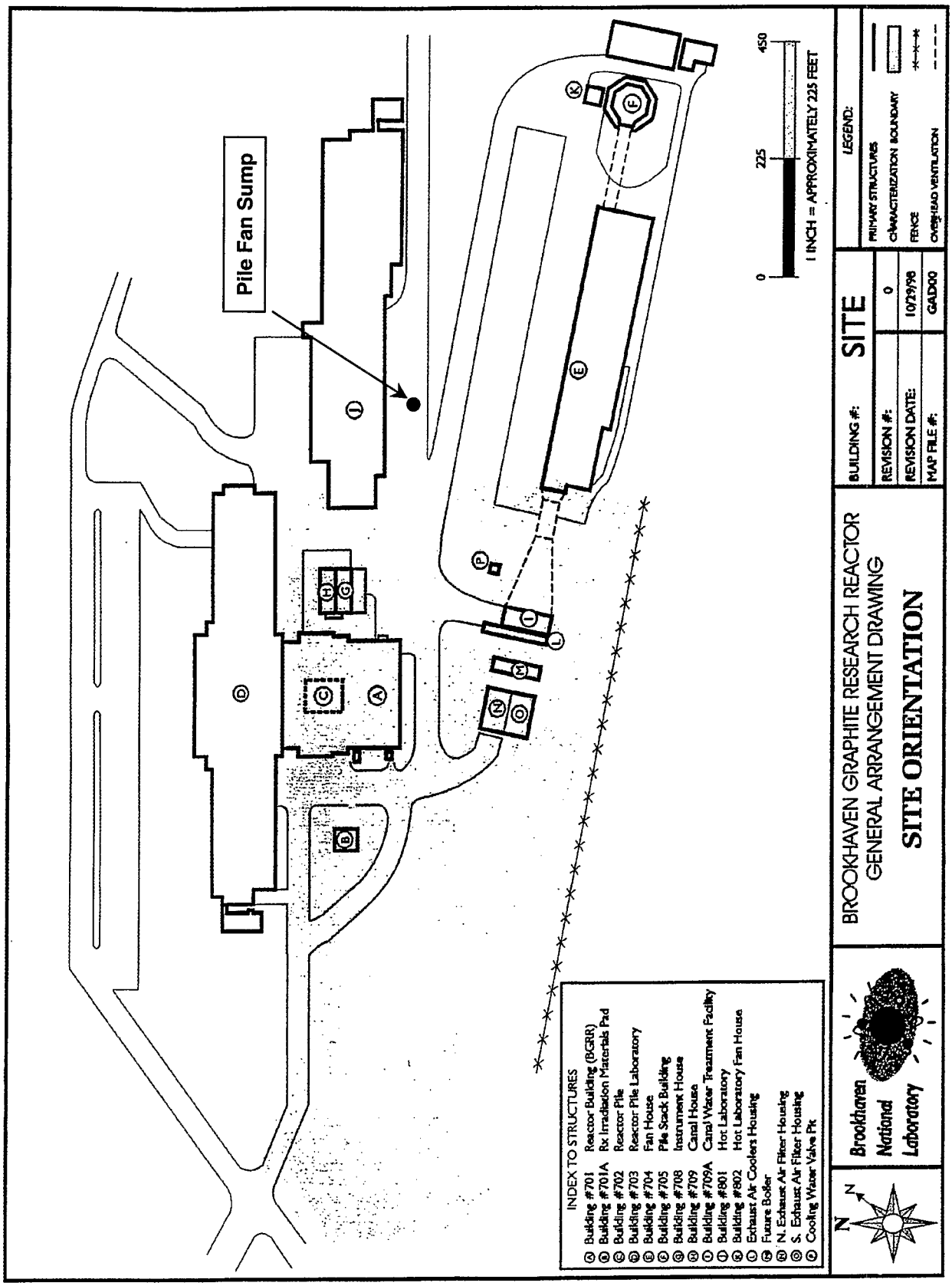

Figure 2. Location of Pile Fan Sump

contamination was initially discovered in 1996 as part of a site-wide effort to identify environmental vulnerabilities. At that time, rainwater was found to be collecting in the sump from the surrounding pavement and filling it to a level where there was obvious penetration to the surrounding soils, where the water then escaped to the environment. This site is designated Area of Concern (AOC) 9D [2]. Under this action the PFS, contaminated soils, and about 250 feet of the associated piping systems are to be removed to coincide with modifications made to comply with the Suffolk County Article 12. These modifications are being undertaken during the summer and fall of 1999 to re-route the HFBR / BGRR stack drains.

During the Operable Unit III Remedial Investigation [3], the PFS was identified as a potential source for a Strontium-90 groundwater plume in the area. Additionally, Geoprobe™ soil samples taken in early 1998 indicated Cesium-137 in the soil (142 pCi/g) near one of the sumps penetrations and lesser amounts of Strontium-90 and gross alpha- and beta-contamination.

3. Release or Threat of Release into the Environment of a Hazardous Substance, Pollutant, or Contaminant

Following the shutdown of BGRR the liquid level monitoring of the PFS was stopped at an unknown time for unknown reasons. Subsequent collection of rainwater from the 705 stack drains and the roadway above the PFS, as well as the Building 704 floor drains caused the sump to fill and overflow. This overflow condition leaked radioactively contaminated water to the adjacent soil column. This problem was discovered in 1997, the water was removed, and routine monitoring and pumping of the sump resumed. See B.1 below for additional information.

B. Other Actions To Date

1. Previous Actions

Water and sludge were removed from the PFS and piping and the interior surfaces inspected between December 1997 and March 1998. Following this, a new weather-tight cover was installed on the PFS to prevent further intrusion of rainwater. Also, instrumentation was installed in the PFS to continually monitor the water level. During an inspection of the sump in March 1998, a piping penetration point was observed which allowed leakage to the soil column. This leakage was a probable source of soil contamination.

2. Ongoing Action

The water level in the sump is monitored continually and maintained at a normal level to avoid leakage to the soil column.

3. Planned Actions

A Suffolk County Article 12 compliance project is being planned to take the PFS out of service in the autumn of 1999. The scope of this project will be revised to include the removal of the PFS, its piping, and contaminated soil adjacent to the sump structure.

C. National Priorities List Status

Brookhaven National Laboratory was added to the National Priorities List in 1989. An Interagency Agreement under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), and applicable New York State regulations was negotiated between DOE, the EPA and NYSDEC. The Interagency Agreement became effective in May 1992 and governs the environmental restoration program at BNL.

III. THREATS TO PUBLIC HEALTH OR WELFARE AND THE ENVIRONMENT: STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

The threats posed by the empty sump and piping and the adjacent contaminated soil are time-critical based on four pieces of information: 1) the existing Strontium-90 plume information on Operable Unit III groundwater; 2) know leakage from the pipe penetration during high water events; 3) known source of contaminated sludges in the PFS; and 4) results of geoprobes in vicinity of PFS that indicates low levels of radioactivity in the soil column. The appropriateness of the removal action is based on two of the eight factors listed in 40 CFR 300.415 (b) (2) [4] of the regulations implementing the National Contingency Plan.

1. Actual or potential exposure to nearby populations, animals or the food chain from hazardous substances, pollutants, or contaminants, and

2. Actual or potential contamination of drinking-water supplies or sensitive ecosystems.

The BNL site is located above a sole-source aquifer, as designated by EPA under the Safe Drinking Water Act, and groundwater is the primary source of drinking water in the area. The groundwater also is classified by New York State as Class GA under 6 NYCRR Part 703 [5], the best usage of which is a source of potable-water. Strontium-90 contaminants identified from work on Operable Unit III have been found in the groundwater on-site.

B. Threats to the Environment

The major threat to the environment is on-site migration of contaminants, uptake by the local fauna and flora, and contamination migration into surrounding soils.

IV. DETERMINATION OF ENDANGERMENT

If the actual or threatened releases of pollutants and contaminants from this site are not mitigated by taking the response action selected in this action memorandum, they pose imminent and substantial endangerment to the environment.

V. PROPOSED ACTION AND ESTIMATED COSTS

A. Removal Action Objectives

The proposed action is to excavate and remove the PFS, its associated piping, and soils with the goal of achieving the cleanup levels developed for Operable Unit 1 [6-8] for future residential use and the Applicable or Relevant Appropriate Requirements (ARAR) addressed in Section V.D. The sump and its associated piping will be removed and disposed of as radioactive waste at a DOE-approved waste facility. The soils surrounding the sump and piping will be surveyed to determine if or where the PFS/piping had leaked. Soils with combined radioactive concentrations that would result in exceeding the 15mRem/year exposure limit will be excavated and disposed of at a DOE-approved facility. This removal action is being undertaken to prevent low-level radioisotopes migrating into surrounding soils and groundwater. Performance of an interim action for this purpose is specifically referred to in the EPA's Office of Solid Waste and Emergency Response (OSWER) Interim Final Guidance on Preparing Superfund Decision Documents Directive 9355.3-02 [9].

All criteria required by DOE Order 435 "Radioactive Waste Management" [10] shall be met during this action. Because the expected contaminants of concern are primarily radiological, all waste generated from this Removal Action is expected to be radiological waste. However, there is a chance small volumes of hazardous or mixed waste could be generated. As stated above, all waste will be disposed of in a DOE-approved waste facility. The exact disposal location will be based on final waste designation. The current plan is to use a commercial disposal facility such as EnviroCare of Utah.

B. Contribution to the Remedial Performance

The BGRR Decommissioning Project will address AOC 9 through several removal actions under the "Policy on Decommissioning Department of Energy Facilities Under CERCLA" (dated 5/22/95) [11]. In the future, a Record of Decision will be developed to document the long-term closeout of AOC 9 based on the results of these actions undertaken as part of the BGRR Project. The proposed removal action addresses source removal, and therefore is consistent with and contributes to the long-term objectives of the Record of Decision for AOC 9.

C. Description of Alternative Technologies

Because the PFS, piping and soil, are contaminated with radioactivity and possibly minor chemical contaminants, the number of practical and suitable treatments that can be applied are limited. Technologies for in-situ solidification of the areas of contamination are available and their effectiveness is well documented, but they are cost-prohibitive compared with excavation and removal.

D. Applicable or Relevant and Appropriate Requirements

The National Contingency Plan [1] Section 300.430 (e)(9)(iii)(B) requires that the selected remedy (BGRR Decommissioning Project) attains the Federal and State ARARs or that a waiver of an ARAR is obtained. This removal action will meet the following ARAR's to the extent practicable.

Chemical-Specific ARARs

The chemical-specific ARARs that the Removal Action will meet are listed below:

1. 6 NYCRR Part 212 [12], General Process Emission Sources: This State regulation will be followed to determine the need for air-emission control equipment.

2. RCRA (40 Code of Federal Regulations parts 260-268) [13]: These Federal regulations define hazardous wastes. All wastes classified as hazardous will be handled, stored, and disposed of off-site at a permitted facility in accordance with these regulations.

3. New York State Hazardous Waste Regulations (6 NYCRR Part 370 - 373) [14]: These regulations define hazardous wastes in New York State. All wastes classified as hazardous will be handled, stored, and disposed of off-site at a permitted facility in accordance with these regulations.

Location-Specific ARARs

No location-specific ARARs were identified.

Action-Specific ARARs

The action-specific ARAR's that this Removal Action will meet are listed below:

1. 10 Code of Federal Regulations Part 835 [15]: This regulation establishes the requirements for controlling and managing radiologically contaminated areas at DOE sites.

2. RCRA (40 Code of Federal Regulations parts 260-268): As described above.

3. New York State Hazardous Waste Regulations (6 NYCRR Part 370 - 373): As described above.

4. Clear Air Act (42 U.S.C Section 7401, et seq.) [16] and National Emissions Standards for Hazardous Air Pollutants (40 Code of Federal Regulations) [17]: This Act regulates and limits the emissions of hazardous air pollutants, including radionuclides.

To Be Considered Guidance

In implementing this Removal Action, the following important guidance will be considered. Guidelines that are not promulgated and are not legally binding:

1. NYSDEC's Division of Air Guidelines for Control of Toxic Ambient Air Contaminants, Air Guide 1: This guide will be used to assess the impacts of air emissions and to assist with evaluating the need for having air-emissions control equipment.

2. NYSDEC's Technical and Administrative Guidance Memorandum (TAGM) "Remediation Guideline for Soils Contaminated with Radioactive Materials" (#4003), September 1993 [18]: This memorandum contains State guidance for remediating radiologically contaminated soils. The State's value of 10 mRem/year above background serves as an additional goal for remediation that will be evaluated during field excavation work.

3. NYSDEC's Technical and Administrative Guidance Memorandum (TAGM): Determination of Soil Remediation Objectives and Remediation Levels (# 4046), January 1994 [19].

4. DOE's Order 5400.5 [20] and draft 10 Code of Federal Regulations 834 "Radiation Protection of the Public and the Environment" [21]: This order, and its current draft rule-making, contains the requirements and guidance for the developing radiological soil-remediation levels at DOE sites.

5. DOE Order 435 "Radioactive Waste Management" [10]: This order provides guidance and requirements for management and disposal of radioactive waste generated at DOE facilities.

6. U.S. EPA's Establishment of Clean-Up Levels for CERCLA Sites with Radioactive Contamination. OSWER Directive 9200.4-18, August 1997 [22]. This directive recommends an allowable exposure to radionuclides to 15mrem/year as consistent with EPA's acceptable risk range.

E. Project Schedule

This removal action will be close coupled with the Article 12 Compliance Project that takes the PFS out of service. Consequently, the actual start date depends on the progress of that project. Major tasks include preparing the PFS Removal Plan, carrying out the work, sampling and analyzing after it is finished, disposing of the waste, and issuing a closeout report. The project is scheduled to begin in September 1999.

F. Estimated Costs

Work Plan Preparation and Project Execution Costs	$153,000
Waste Disposal Costs	$56,000
Sample Analysis and Closure Reporting	$26,000
Total Estimated Costs	$235,000

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

A delayed action or no action will increase the potential for the contaminant to migrate deeper into the soil column, as well as to increase uptake by local fauna and flora. Delaying action will potentially increase the scope and cost of the project as larger volumes of soil will become affected.

VII. PUBLIC PARTICIPATION

Public participation for the PFS Removal Action includes issuing a public notice and publishing an article in the Brookhaven Bulletin. These activities will coincide with the submission of this Action Memorandum to the Administrative Record. Roundtables scheduled before beginning the project in July will discuss work on the PFS. Once this Action Memorandum has been issued, a public notice of its availability will be published in *Newsday* (regional distribution) and in *Suffolk Life*. Simultaneously, a copy of the public notice will be sent to BNL's Environmental Restoration Division Community Relations mailing list (approximately 3,000 addresses).

VIII. OUTSTANDING POLICY ISSUES

The future use of the BGRR land has not been determined. The goal of this action is to prepare the land for residential use after 50 years of institutional control by the DOE.

IX. ENFORCEMENT

The site is owned by DOE and operated by Brookhaven Science Associates. The DOE will fund the source control disposal entirely. The Removal Action will be conducted in accordance with CERCLA and National Contingency Plan requirements, the Interagency Agreement Executive Order 12580 [23], applicable New York State regulations, and Suffolk County Article 12.

X. RECOMMENDATION

This decision document recommends a time-critical removal action of the Pile Fan Sump at the BGRR at the Brookhaven National Laboratory in Upton, New York. This removal action also will include the associated piping and soils that may be contaminated with hazardous- and radioactive-materials above the cleanup levels established to limit future exposure to 15 mRem/year, to meet future land-use criterion, and to protect the groundwater. This decision document was developed in accordance with CERCLA as amended, and is consistent with the National Contingency Plan.

XI. REFERENCES

1. 40 CFR 300, National Contingency Plan.

2. Letter from Mary Logan (EPA) to G. Malosh (DOE/BHG), Subject: Brookhaven National Laboratory, BGRR (letter dated 3/23/99).

3. Final Operable Unit III Remedial Investigation Report, International Technology Corporation, March 1, 1999.

4 40 CFR 300.415 (b) (2), National Oil & Hazardous Substance Pollution Contingency Plan.

5. New York State General Process Emissions Sources 6 NYCRR Part 703.

6. "Final Report, Radiological Risk Assessment of Operable Units 1/VI, Brookhaven National Laboratories," prepared for CDM by Afftrex Ltd. Under contact No. NYC002-5109-CS, 1996.

7. "Brookhaven National Laboratory Chemical/Animal Pits and Glass Holes, Final Evaluation of Alternatives Report, Volume 1", prepared for BNL by CDM Federal Programs Corporation, under contract No. 739174, Document No. 5109-017-FR-BCRR, 1997.

8. "Brookhaven National Laboratory Final Feasibility Study Report Operable Unit 1 and Radiologically-Contaminated Soils," prepared for BNL by CDM Federal Programs Corporation, under contract No. 739174, Document No. 5109-020-FR-BCVJ, 1999.

9. Office of Solid Waste and Emergency Response (OSWER) Directive 9355.3-02, Interim Final Guidance on Preparing Superfund Decision Documents dated June 1, 1989, Available from National Technical Information Service (NTIS), Order No. PB 91-921265.

10. United States Department of Energy, DOE Order 435 "Radioactive Waste Management."

11. "Policy on Decommissioning Department of Energy Facilities Under CERCLA" (dated 5/22/95).

12. New York State General Process Emissions Sources, 6 NYCRR Part 212.

13. 40 CFR Parts 260-268, Hazardous Waste Management System (RCRA).

14. New York State Hazardous Waste Regulations (6 NYCRR Part 370 - 373).

15. 10 CFR Part 835, Occupational Radiation Protection.

16. Clear Air Act (42 U.S.C Section 7401, et seq.).

17. National Emissions Standards for Hazardous Air Pollutants (40 CFR).

18. NYSDEC Technical and Administrative Guidance Memorandum (TAGM), "Remediation Guideline for Soils Contaminated with Radioactive Materials" (#4003), September 1993.

19. NYSDEC Technical and Administrative Guidance Memorandum: Determination of Soil Remediation Objectives and Remediation Levels (# 4046), January 1994.

20. DOE Order 5400.5, Radiation Protection of the Public and the Environment.

21. Draft 10 CFR Part 834, "Radiation Protection of the Public and the Environment."

22. U.S. EPA Establishment of Clean-Up Levels for CERCLA Sites with Radioactive Contamination. Office of Solid Waste and Emergency Response (OSWER) Directive 9200.4-18, August 1997.

23. Interagency Agreement Executive Order 12580.

C (MB):/WORD/ACTION MEMORANDA/PILE FAN SUMP

X-PH: V4.4@bnl.gov
From: "Pulsford, Stephen" <pulsford@bnl.gov>
To: "Lafon, Christine" <clafon@bnl.gov>, "Gmur, Eloise" <egmur@bnl.gov>
Cc: "Blevins, Beth P" <blevins@bnl.gov>,
"White, Kenneth W"
<kwwhite@bnl.gov>,
"Schlender, Michael H" <schlender@bnl.gov>,
"Goodenough, James" <goodenough@bnl.gov>,
"Pulsford, Stephen"
<pulsford@bnl.gov>
Subject: PFS One Page Public Notice
Date: Mon, 27 Sep 1999 18:26:23 -0400

Christine,

I talked to Mike this afternoon and he will sign today the PFS Action Memorandum (rev1) which incorporated the EPA and NYSDEC comments. Based on that, the PFS one page public notice can be sent out tomorrow morning, saying that the PFS Action Memorandum will be in the BNL Public Record by September 30, 1999.

Thanks for your efforts,

Stephen

To: pulsford@bnl.gov
From: Eloise Gmur <egmur@bnl.gov>
Subject: Pile Fan Sump Action Memo
Cc: goodenough@bnl.gov, meersman@bnl.gov, kwwhite@bnl.gov, clafon@bnl.gov
Bcc:

Steve-

The public notice for the Pile Fan Sump Action Memo has been submitted to Newsday for publication on Sept. 30, 1999 and to Suffolk Life for publication on October 6, 1999. There is no public comment period for this document.

Chrisine can put a copy of the Executive Summary of the document (or the entire document) on the BGRR web page (with a link to the ERD web page) if you supply her with an electronic copy. We have been doing this with items that are put in the Administrative Record to provide the public with an additional way to view the document.

I will need eight copies of the Action Memo as early as possible on Wednesday, Sept. 29 to prepare them to go to the libraries on the 30th. I will also need a transmittal letter from DOE that approves the document for entry into the record. We will be putting the documents into three ring binders, so there is no need to bind them in any way.

If you have any questions, please give me a call. I'm sure we will be putting BGRR documents into the record on a regular basis now.

Eloise

Department of Energy
Brookhaven Group
Building 464
P.O. Box 5000
Upton, New York 11973

RECEIVED
SEP 30 1999
BGRR PROJECT

SEP 30 1999

Mr. James Lister, P.E.
New York State Department of
Environmental Conservation
Division of Hazardous Waste Remediation
50 Wolf Road - Suite 210
Albany, New York 12233-7010

Ms. Mary Logan
Federal Facilities Section
Emergency and Remedial Response Division
U.S. EPA - Region II
290 Broadway - 18th Floor
New York, N.Y. 10007-1866

Dear Mr. Lister and Ms. Logan:

SUBJECT: APPROVED PILE FAN SUMP ACTION MEMORANDUM: BROOKHAVEN GRAPHITE RESEARCH REACTOR DECOMMISSIONING PROJECT (BGRR-DP)

This letter transmits the Final Action Memorandum for the Area of Concern 9D, Pile Fan Sump (PFS) Time Critical Removal Action. Your comments have been incorporated. The Department of Energy, Brookhaven Group has approved the Action Memorandum for project execution.

In accordance with the Brookhaven National Laboratory Interagency Agreement (IAG), the document will be included in the Administrative Record and distributed to public reading rooms. A Notice of Availability will be published by September 30, 1999.

If you have any questions regarding the Pile Fan Sump Removal Action, please contact either Mr. James D. Goodenough on (516) 344-2423 or Mr. Scott Mallette on (516) 344-5345.

Sincerely,

George J. Malosh
Brookhaven Group Manager

Enclosure:
As stated

cc: J. Pim, SCDHS, w/encl.
R. Cowen, NYSDEC, w/encl.
R. Rommel, NYSDEC, w/encl.
J. Crua, NYSDOH, w/encl.
A. Salame-Alfie, NYSDOH, w/encl.
M. Stahr, EM-441, GTN, w/encl.
J. Roberts, EPG, CH, w/encl.
J. Goodenough, EPG, CH, w/encl.
E. Martinez, EPG, CH, w/encl.
S. Mallette, BHG, w/o encl.
M. Schlender, BNL, w/o encl.
S. Pulsford, BNL, w/o encl.

NOTICE OF AVAILABILITY
The United States Department of Energy
announces the availability of a document relating to the
investigation of the Brookhaven National Laboratory Inactive Hazardous Waste Site,
Brookhaven Graphite Research Reactor
for public review

The U.S. Department of Energy (DOE) announces the availability of a document relating to the environmental restoration activities at Brookhaven National Laboratory (BNL). The *Action Memorandum: Brookhaven Graphite Research Reactor Pile Fan Sump Removal Action* is available for review at the libraries listed below. There is no public comment period for this document.

This action memorandum describes a removal action that is taking place on the Laboratory site. A removal action is an accelerated cleanup response to a known or potential contamination source.

The Pile Fan Sump collects water from various laboratory facilities, including the Brookhaven Graphite Research Reactor (BGRR) and the High Flux Beam Reactor. It is an underground concrete structure that is 5 feet wide, 7 feet long and 10 feet deep, weighing approximately 27,000 pounds. This sump has approximately 250 feet of floor-drain piping connected to it.

As a result of past BGRR operations, the sump is contaminated with fission products such as cesium-137 and strontium-90. It is a potential source for a strontium-90 groundwater plume detected by the Operable Unit III remedial investigation.

The Pile Fan Sump contamination was initially discovered in 1996 during a site-wide environmental investigation. This investigation found that rainwater was collecting in the sump and overflowing into surrounding soils.

In late 1997 and early 1998, water and sludge were removed from the Pile Fan Sump and connected piping, and the sump was capped with a weather-tight cover to prevent further intrusion of rainwater. Also, instruments were installed to monitor the water level.

Under this removal action, the sump and the 250 feet of piping connected to it will be excavated and shipped to a licensed off-site facility for disposal. Surrounding soils will be surveyed to determine if any radioactive contamination is present. Any soils with radioactive contamination above established cleanup levels will be excavated and shipped to a licensed off-site facility for disposal. The excavated area will be backfilled with soils that are verified to be below the cleanup standards.

Located in Upton, N.Y., BNL is classified as an Inactive Hazardous Waste Site by the New York State Department of Environmental Conservation. BNL is on the U.S. Environmental Protection Agency's National Priority List.

The *Action Memorandum: Brookhaven Graphite Research Reactor Pile Fan Sump Removal Action* can be found at the following libraries:

Longwood Public Library
800 Middle Country Road
Middle Island, NY
(516) 924-6400

Mastics-Moriches-Shirley Community Library
301 William Floyd Parkway
Shirley, NY
(516) 399-1511

BNL Research Library
Building 477A
Upton, NY
(516) 344-3483

U.S. EPA, Region II Library
290 Broadway
New York, NY
(212) 637-4296

For more information, contact:

Jim Goodenough
U.S. Department of Energy
(516) 344-2423

Ken White
Brookhaven National Laboratory
(516) 344-4423

Legal Notice 7701

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U.S. EPA, Region II Library
290 Broadway
New York, NY
(212) 637-4296

For more information, contact:

Jim Goodenough
U.S. Department of Energy
(516) 344-2423

Ken White
Brookhaven National Laboratory
(516) 344-4423

9-30 S/O