

**Final Draft**  
**The Role of an Environmental Management System**  
**in Long-term Stewardship Planning**

**April 1, 2002**



Prepared for

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Planning Critical Elements of the Transition to Long-term Stewardship  
At Chicago Operations Facilities

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REGISTERED TO ISO 14001

**FINAL DRAFT**  
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**Introduction:**

Brookhaven National Laboratory (BNL) has implemented an ISO 14001 conforming Environmental Management System (EMS). It also has undertaken several restoration, remedial, and D&D activities to eliminate or mitigate historical contamination on its site. Plans are underway to transfer and integrate the responsibilities and requirements for maintenance, operation and performance evaluation into routine operations of BNL once the construction and initial start-up phase of these activities are complete. Several DOE-CH organizations have been tasked with evaluating the extent to which Long Term Stewardship (LTS) elements are captured within existing site systems. In particular, BNL has been tasked with evaluating the role that the BNL EMS will play in satisfying LTS requirements. The following paper identifies synergies, opportunities for efficiencies, and cost savings/cost avoidance that can be gained by utilizing the existing EMS as one tool in reducing the overall LTS mortgage for Brookhaven in the years to come.

**Background:**

An Environmental Management System (EMS) was implemented at BNL between 1999 and 2000. This system was independently verified as conforming to the ISO 14001 International Standard in 2001. In order to achieve this certification, BNL developed and implemented a comprehensive set of policies, programs, and procedures for addressing the 17 requirements of the ISO 14001 Standard. Attachment 1 provides a summary description of these requirements. This certification attests that BNL has effectively developed and implemented programs to manage and control its significant environmental aspects (i.e., waste generation, air emissions, disturbance to endangered species or protected wetlands, etc.) including those associated with the Environmental Restoration Program. A summary description of BNL's EMS Program is provided in Attachment 2.

**LTS/EMS Integration Opportunities:**

The EMS program already established has underlying policies and procedures to carryout many of the required institutional management functions of the LTS Program. As a result there are integration opportunities in several key areas where program requirements overlap. Examples include:

- Environmental Stewardship Policy
- Risk-based budget prioritization
- Organizational responsibility and training
- Compliance Assurance
- Institutional and project specific operational controls and maintenance
- Monitoring, surveillance and reporting

- Emergency preparedness, response, and contingency management
- Records management
- Performance reviews, corrective action and improvement programs
- Stakeholder involvement program

A brief description of each of these elements is provided below.

Environmental Stewardship Policy: BNL implemented a single, integrated Environmental Stewardship Policy in 1997 which embodies the principles of LTS. The Laboratory commitments found in the policy are Pollution Prevention, Compliance, Clean Up, Community Outreach and Continual Improvement. This policy has been communicated widely to employees, visiting scientists, regulators, and community members. The ISO 14001 registration certificate attests to fact that each employee knows the policy commitments, knows their role in achieving those commitments, and does their part in fulfilling those commitments. See Attachment 3 for BNL’s Environmental Stewardship Policy.

Risk-based budget prioritization: One area of concern regarding LTS is how future environmental restoration work will be funded and managed. Like many DOE sites, BNL uses a risk ranking and prioritization system for identifying and funding high priority ESH and infrastructure upgrade projects. At BNL, EMS principles have been incorporated into its “Project Programming, Prioritization & Budgeting Process” system. This ranking system now gives priority to activities that address environmental compliance issues and stakeholder commitments. Although commitments to other initiatives already exist and extend to ~FY06, this system provides one mechanism for requesting supplemental funding from the landlord (acknowledging budgetary constraints) to manage future restoration work, if and when discovered. In addition, the EMS program has established department level processes for prioritizing, funding and rectifying organizational-specific environmental issues in an attempt to prevent the generation of future restoration actions.

Organizational responsibility and training: In support of EMS implementation, BNL established a comprehensive organizational infrastructure and implemented a formal system of “Roles, Responsibilities, Authorities and Accountabilities” to address environmental stewardship responsibilities. In addition it has implemented a comprehensive environmental training program that includes general awareness, management, regulatory, and job-specific training requirements. As a result, BNL has successfully enhanced the environmental ethic of employees, increased the environmental care considerations in the planning and execution of work, and improved the ownership and inherent responsibility for environmental stewardship. This type of organizational culture is ready to accept its LTS responsibilities, assuming DOE provides adequate funding to implement and maintain the commitments it has made in the IAG and to its stakeholders.

Compliance Assurance: BNL’s EMS Program has an enhanced emphasis on compliance assurance, which will enable BNL to overcome one of the LTS challenges, responding to changes in applicable laws, regulations and standards that will occur over decades that LTS applies. The BNL EMS Program has established processes and procedures established to:

- a. Identify, interpret, track and effectively communicate environmental requirements to BNL employees, visiting researchers, experimenters, contractors, and service providers. The scope includes prospectively identifying and obtaining information about changes in requirements, and incorporating those changes into the EMS.
- b. Anticipate, identify, implement, track, and complete activities necessary to achieve compliance to legal and other requirements associated with its operations.
- c. Integrate regulatory requirements into facility operations, including those of on-site contractors.
- d. Ensure that environmental reports required by federal and state regulations and policy are routinely prepared and submitted, as appropriate, on a timely basis.
- e. Implement a self-assessment and corrective action program which ensures that operations are assessed, incidents and non-compliance are reported, investigated, and followed-up; compliance audits are implemented and coordinated; root causes are identified and addressed; follow-ups are conducted promptly and completely; and, organizational personnel responsibilities are assigned
- f. Maintain a positive and proactive relationship with regulatory agencies.

Institutional and project specific operational controls and maintenance: As part of its Integrated Safety Management Program, operations and facilities are evaluated to identify appropriate and adequate administrative and engineered controls, and improvements if needed. Facility-specific procedures are developed to ensure operational controls are implemented as intended and operating criteria are met. These processes and procedures are conducted for both routine operations and maintenance activities, and are readily transferable to the operation and maintenance of remedial systems, including maintenance of structures in the S&M mode.

Monitoring, surveillance and reporting: BNL has a comprehensive, site-wide environmental monitoring program, including documented procedures to monitor and measure, on a regular basis, the key characteristics of operations and activities that can have a significant impact on the environment. Environmental performance of facilities, treatment systems, routine operations and ambient conditions is routinely reported to ensure effective functioning of the EMS and timely identification and implementation of corrective measures. Compliance Assurance programs and tracking systems ensure timely reporting to regulators. Monitoring data, trends and quality assurance data, including precision and accuracy estimates as well as proficiency test results, are summarized in the annual Site Environmental Report. This program is poised to take on the LTS O&M, environmental monitoring and S&M requirements and commitments, and accurately determine when clean-up criteria have been met.

Emergency preparedness, response, and contingency management: BNL has established a program with formal procedures to identify the potential for and respond to accidents and emergency situations. Formal critiques, accident investigations and reviews are conducted to determine the root cause for the incident and develop corrective actions to prevent and mitigate

the environmental impacts that may result. Drills are conducted periodically to test and plan for appropriate response. Formal procedures, such as the Groundwater Protection Contingency Plan, exist to detail the evaluation and response when an unexpected groundwater sample result is received.

Records management: BNL EMS requirements include development of a records management system for identifying, storing, and maintaining environmental records, both hardcopy and electronic, in a manner that ensures their integrity and in a way that is easily retrievable and cost effective. Database systems for existing restoration-related characterization data have been enhanced, but further evaluation is needed to determine whether hardcopy or electronic methods are the more reliable and cost-effective way to ensure long-term storage and access to LTS-related data and records.

Performance reviews, corrective action and improvement programs: CERCLA requires a five-year Review. The overall purpose of this review is to determine whether the remedy at a site is protective of human health and the environment. Where a site has remedial actions that are still underway, a five-year review confirms that immediate threats have been addressed and that the remedy will be protective when complete. The main purpose of the five-year review is not to reconsider decisions made during the selection of the remedy, but to evaluate the implementation and performance of the selected remedy. In some cases, however, a five-year review report may need to recommend that the remedy be re-evaluated, or that an additional response action be considered. To do this, the technical assessment conducted as part of the five-year review examines three basic questions shown below:

- Is the remedy functioning as intended by the decision documents?
- Are the assumptions used at the time of the remedy selection still valid?
- Has any other information come to light that could call into question the protectiveness of the remedy?

Most five-year reviews include a review of documents, interviews, and a site inspection. Many reviews include a review of newly promulgated standards, and changes in the standards that were identified as applicable or relevant and appropriate requirements at the time of the ROD and factors used to develop site-specific, risk based levels. This information is reviewed to determine if changes occurred since the ROD, calling into question the protectiveness of the remedy. Some reviews also include a recalculation of risk or a risk assessment when necessary to determine whether a remedy protects human health and the environment. When applicable, monitoring and sampling data, and the documentation of O&M are also examined.

The BNL EMS system requirement for Management Review currently provides a forum for senior management to assess the adequacy, suitability and effectiveness of the EMS Program and its key elements, including elements that have been expanded to incorporate LTS requirements. During this review senior managers identify and authorize the action items and improvement opportunities that will be pursued in the following year. This process is customized to the organizations operations, and thereby will encompass the CERCLA evaluation criteria as well as LTS criteria for the organization(s) with LTS responsibilities &

operations, such as remedial system performance and opportunities to optimize the remedial action by introducing new technologies or approaches. The Management Review will not replace the five-year review, but will facilitate proactive actions to ensure that human health and the environment are protected.

Stakeholder involvement program: A challenge for any site planning for its LTS responsibilities is developing processes for meaningful public involvement and establishing partnerships with neighbors, elected officials, and regulators. BNL has already made significant progress in this area. Several initiatives were undertaken to reach out to these interested parties. The underlying goal was to “*inform and involve*”. A Community Advisory Committee, made up of civic, activist, and community groups, was formed to provide direct input to the Laboratory Director. To facilitate two-way communication with elected officials and regulators, DOE created the “Brookhaven Executive Roundtable”. A Community Involvement Plan was developed to provide managers with guidelines for soliciting and using input from the public in their decision-making processes. Finally, BNL utilized a previously untapped yet invaluable resource to reach out to the community: their employees. Through face-to-face contacts, employees developed relationships with key opinion leaders in the community and provided new channels for information flow, including support of educational programs. Through each of these channels, plus other formal educational programs at BNL, environmental education programs have been established. A holistic community involvement program such as this will enable BNL to fulfill its LTS commitments.

A summary description of actual implementation of BNL’s EMS Program is provided in Attachment 4.

**Other Benefits:**

As mentioned above, BNL has achieved ISO 14001 certification. To maintain certification, BNL voluntarily undergoes periodic independent verification by certified auditors. These comprehensive audits verify conformance to both ISO 14001 requirements and any site-specific BNL EMS requirements. These site-specific requirements include the regulatory and operational requirements associated with LTS and the DOE-EPA-DEC Interagency Agreement (IAG). This independent annual audit program, which has been in place for BNL’s Environmental Restoration Program since 2000, provides assurance that adequate oversight is being conducted. This additional assurance may be sufficient for the IAG regulators to expedite de-listing portions of the site from the National Priorities List.

Since the supporting processes of an EMS program have been implemented throughout all organizational units and facilities at BNL, LTS responsibilities and requirements can be assimilated into existing organizational units. This avoids establishing a separate stand-alone department/project/office to manage LTS activities and development of separate, duplicative programs and procedures. This management approach is expected to result in avoidance of administrative costs, enhanced integration with routine operations at BNL, and increased likelihood of adherence to LTS requirements and goals.

**Cost Savings:**

Management is seeking measurement of the cost savings that result from the implementation of an EMS. However, this is a difficult metric to quantify. A number of industrial corporations have conducted studies to demonstrate the benefit of EMS. BNL is also in the process of developing data to enable the quantification of cost savings and the improvement in its environmental performance. As these data become available, it will be shared with other sites.

An EMS provides a framework for an organization to achieve a high level of environmental performance. With improved environmental performance comes a reduced direct and indirect cost. Examples of direct cost savings are a reduction in fines for non-compliance, reduced regulatory presence at the facility, reduction in waste disposal costs, and reduced spill and emergency response efforts. With respect to LTS costs, development, training, and implementation costs are avoided in some cases by utilizing existing organizational units and lab-wide EMS procedures, or minimized in cases where only minor modification are required. Examples of indirect cost savings include improved stakeholder trust and community acceptance of a continued mission of world-class science.

# **ATTACHMENT 1**

## **ISO 14001 Environmental Management Systems Requirements Specification**

### **General (Clause 4.1):**

An organization shall establish and maintain an Environmental Management System in accordance with the requirements of this International Standard.

### **1 Environmental Policy (Clause 4.2)**

Top Management defines the organization's environmental policy and ensures that it is:

- Appropriate to the environmental impacts of its activities, products or services
- Includes a commitment to continual improvement and pollution prevention
- Includes a commitment to comply with relevant regulations and other requirements
- Provides the framework for setting and reviewing environmental objectives and targets
- Documented, implemented, maintained, and communicated to all employees
- Available to the public.

### **2 Planning**

#### **2.1 Environmental aspects (Clause 4.3.1)**

Establish and maintain procedures to identify the environmental aspects of activities, products or services. Ensure that aspects related to significant impacts are considered in setting environmental objectives. Keep this information up to date.

#### **2.2 Legal and other requirements (Clause 4.3.2)**

Establish and maintain a procedure to identify and have access to legal and other requirements that are applicable to the environmental aspects of company activities, products or services.

#### **2.3 Objectives and targets (Clause 4.3.3)**

Establish and maintain documented environmental objectives and targets at each relevant function and level within the organization. Consider legal and other requirements when setting objectives and targets. The objectives and targets shall be consistent with the environmental policy, including the commitment to pollution prevention.

#### **2.4 Environmental management program(s) (Clause 4.3.4)**

Establish and maintain a program(s) for achieving objectives and targets. The program shall include designation of responsibilities and means and time frame for achievement.

### **3 Implementation and Operation**

#### **3.1. Structure and responsibility (Clause 4.4.1)**

Define, document and communicate roles, responsibilities and authorities. Management shall provide resources essential to the implementation and control of the EMS. The resources should include dedicated individuals responsible for establishing, implementing, maintaining, and reporting on the EMS to top management.

#### **3.2. Training, awareness and competence (Clause 4.4.2)**

Identify training needs and require all personnel whose work may create a significant impact on the environment to receive appropriate training. Establish and maintain training procedures. Personnel performing tasks, which can cause significant environmental impacts, shall be competent on the basis of education, training and experience.

#### **3.3. Communication (Clause 4.4.3)**

With regard to its environmental aspects and EMS, establish and maintain procedures for internal and external communications. Consider external communications on significant environmental aspects.

**3.4. EMS documentation (Clause 4.4.4)**

Establish and maintain information, in paper or electronic form, to describe the elements of the EMS and their interaction along with direction to related documentation.

**3.5. Document control (Clause 4.4.5)**

Establish and maintain procedures controlling all documents required by the ISO 14001 Standard. Documentation shall be legible, dated, identifiable, orderly and retained for a specified period of time. Establish and maintain a procedure to create and modify all documents.

**3.6. Operational control (Clause 4.4.6)**

Identify and plan those operations and activities associated with the significant environmental aspects in line with policy, objectives and targets. Establish and maintain procedures for operational control to address situations that could lead to deviation from the policy, objectives and targets.

**3.7. Emergency preparedness and response (Clause 4.4.7)**

Establish and maintain procedures to identify the potential for and response to accidents and emergency situations, and for preventing and mitigating the environmental impacts that may be associated with them. Test procedures periodically where practicable.

**4. Checking and corrective action**

**4.1 Monitoring and measurement (Clause 4.5.1)**

Establish and maintain documented procedures to monitor and measure, on a regular basis, the key characteristics of operations and activities that can have a significant impact on the environment. Record performance and track information. Calibrate and maintain monitoring and measurement equipment, and keep calibration records.

**4.2 Nonconformance and corrective and preventive action (Clause 4.5.2)**

Establish and maintain procedures for handling and investigating nonconformance, taking action to mitigate impacts, and corrective/preventive actions. Implement corrective or preventive actions commensurate with nonconformance. Record changes to procedural documentation relative to corrective and/or preventive actions.

**4.3 Records (Clause 4.5.3)**

Establish and maintain procedures for the identification, maintenance and disposition of environmental records, including training and audit records. Ensure that records are legible, identifiable, traceable, protected from loss and damage, and maintained. Establish record retention times.

**4.4 Environmental management system audit (Clause 4.5.4)**

Establish and maintain a program and procedures for periodic EMS audits. Schedule audits based on importance of the activity. Establish a procedure to address the scope, frequency, methodology, reporting responsibilities and requirements for conducting audits.

**5. Management Review (Clause 4.6)**

Top management shall periodically review the EMS to ensure continuing suitability, adequacy and effectiveness. Document the review. Address the need to change the policy, objectives and other elements in light of audit results, changing circumstances and commitment to continual improvement.

## *Attachment 2*

### *EMS ISO 14001 Implementation at Brookhaven National Laboratory*

**Environmental Policy:** BNL issued its environmental stewardship policy statement that describes BNL's commitment to the environment in five key areas: Pollution Prevention, Compliance, Clean-up, Community Involvement and Continual Improvement. This policy is used as a framework for planning, decision-making, and actions.

**Environmental Aspects:** BNL has determined that the following environmental aspects of the Laboratory's operations have the potential to affect the environment: Waste generation; Atmospheric emissions; Liquid effluents; Storage or use of chemicals and radioactive materials (potential for accidental release or contamination); Natural resource usage (power and water consumption), soil activation, sensitive habitats, endangered species and cultural resources. As part of its Integrated Safety Management Program, significant environmental aspects are evaluated and used to identify training requirements, develop & implement operational controls (including engineering controls, administrative control procedures, and pollution prevention opportunities), assess emergency planning issues, and/or determine applicable requirements.

**Legal and Other Requirements:** New or revised external regulations as well as formal voluntary commitments are analyzed to determine their applicability to the Laboratory, and what additional actions are required, if any, to achieve compliance. This may involve developing or revising laboratory documents and policies, developing specific work instructions, administering training, or installing engineered controls.

**Objectives and Targets:** BNL establishes environmental objectives and performance measures to drive improvements to the EMS and to measure progress in improving environmental performance. These objectives and measures focus on environmental aspects that can have a significant impact, reflect stakeholder concerns, and are aligned with commitments made in the environmental policy.

**Environmental Management Program:** Organizations within BNL develop plans identifying the actions needed to achieve their environmental objectives, and commit resources to successfully implement their plan. BNL also has a budgeting system designed to ensure that priorities are balanced, and that adequate resources are invested in environmental programs.

**Structure and Responsibility:** BNL established a program to define employee's role and responsibilities in key areas including environmental protection and established an Environmental Services Division of environmental professionals and other support organizations to assist the research departments in fulfilling their environmental responsibilities.

**Training, Awareness and Competence:** BNL enhanced their training programs for staff and visitors to ensure that they are capable of carrying out their environmental responsibilities.

**Communication:** BNL improved and expanded their processes for internal and external communications on environmental issues and enhanced community outreach activities such as the establishment of a Citizens Advisory Committee. Input from community members is sought and considered in Laboratory decision-making processes. Educational programs on environmental issues are offered to local schools.

**EMS Documentation:** Procedures to ensure successful achievement of EMS program requirements are documented, maintained and implemented. A web-based system called the Standards Based Management System (SBMS) has been developed to improve the quality, usability of and access to Laboratory-level information. SBMS contains policy, regulatory requirements, manuals, and Laboratory-wide procedures that control different processes and types of work performed at BNL, including environmental protection activities.

**Document Control:** SBMS contains a comprehensive document control system to ensure effective management of procedures and other system information. When facilities require additional procedures to control their work, document control protocols are implemented to ensure that workers have access to the current versions of work

instructions.

**Operational Control:** As part of its Integrated Safety Management Program, work processes and facilities are evaluated to identify appropriate and adequate administrative and engineered controls, and improvements if needed. Facility-specific procedures are developed to ensure operational controls are implemented as intended and operating criteria are met.

**Emergency Preparedness and Response:** BNL has a program to provide time critical response to hazardous materials or other environmental emergencies. This program includes procedures for preventing as well as responding to emergencies.

**Monitoring and Measurement:** BNL has a comprehensive, site-wide environmental monitoring program, and environmental performance is summarized annually in the Site Environmental Report to ensure effective functioning of the EMS and timely identification and implementation of corrective measures. Information management systems and processes to ensure timely regulatory reporting are implemented.

**Nonconformance, and Corrective and Preventive Actions:** BNL has improved its processes to identify and correct problems. This includes development of a “lessons learned” program to prevent recurrences.

**Records:** EMS related records, including audit and training records, are maintained to ensure integrity, to protect them from loss and enable retrieval.

**EMS Audit:** To periodically verify that the EMS Program is operating as intended, surveillances and audits are conducted. Conducted as part of the site-wide self-assessment program, they are designed to ensure that any nonconformance to the ISO 14001 standard or regulatory requirement is identified and addressed.

**Management Review:** In addition to audits, a management review process is implemented to involve top management in the assessment of the EMS and BNL’s environmental performance. An evaluation of the adequacy, suitability and effectiveness of the EMS Program in achieving BNL’s objectives is conducted. As necessary, the need for changes and continual improvement of systems or operations is identified, prioritized, and addressed.

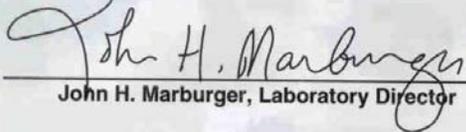
# Environmental Stewardship Policy

It is Brookhaven National Laboratory's (BNL) policy to integrate environmental stewardship into all facets of the Laboratory's missions. We will manage our programs in a manner that protects the ecosystem and public health.

In support of this policy, BNL makes the following commitments:

-  We are committed to achieving compliance with applicable environmental requirements.
-  In consideration of the potential impacts of our activities on the environment, we will integrate pollution prevention/waste minimization, resource conservation, and compliance into all of our planning and decision-making. We will adopt cost-effective practices that eliminate, minimize or mitigate environmental impacts.
-  We will define, prioritize, and aggressively correct and clean up existing environmental problems.
-  We will work to continually improve our environmental management system and performance. We will establish appropriate environmental objectives and performance indicators to guide these efforts and measure our progress.
-  We will maintain a positive, proactive, and constructive relationship with our neighbors in the community, regulators, DOE, and our other stakeholders. We will openly communicate with stakeholders on our progress and performance.

In addition to my annual review of BNL's progress on environmental goals and adherence to this policy, I invite all interested parties to provide me with input on our performance relative to this policy, and the policy itself.

  
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John H. Marburger, Laboratory Director

11/19/98  
Date

  
**BROOKHAVEN**  
NATIONAL LABORATORY

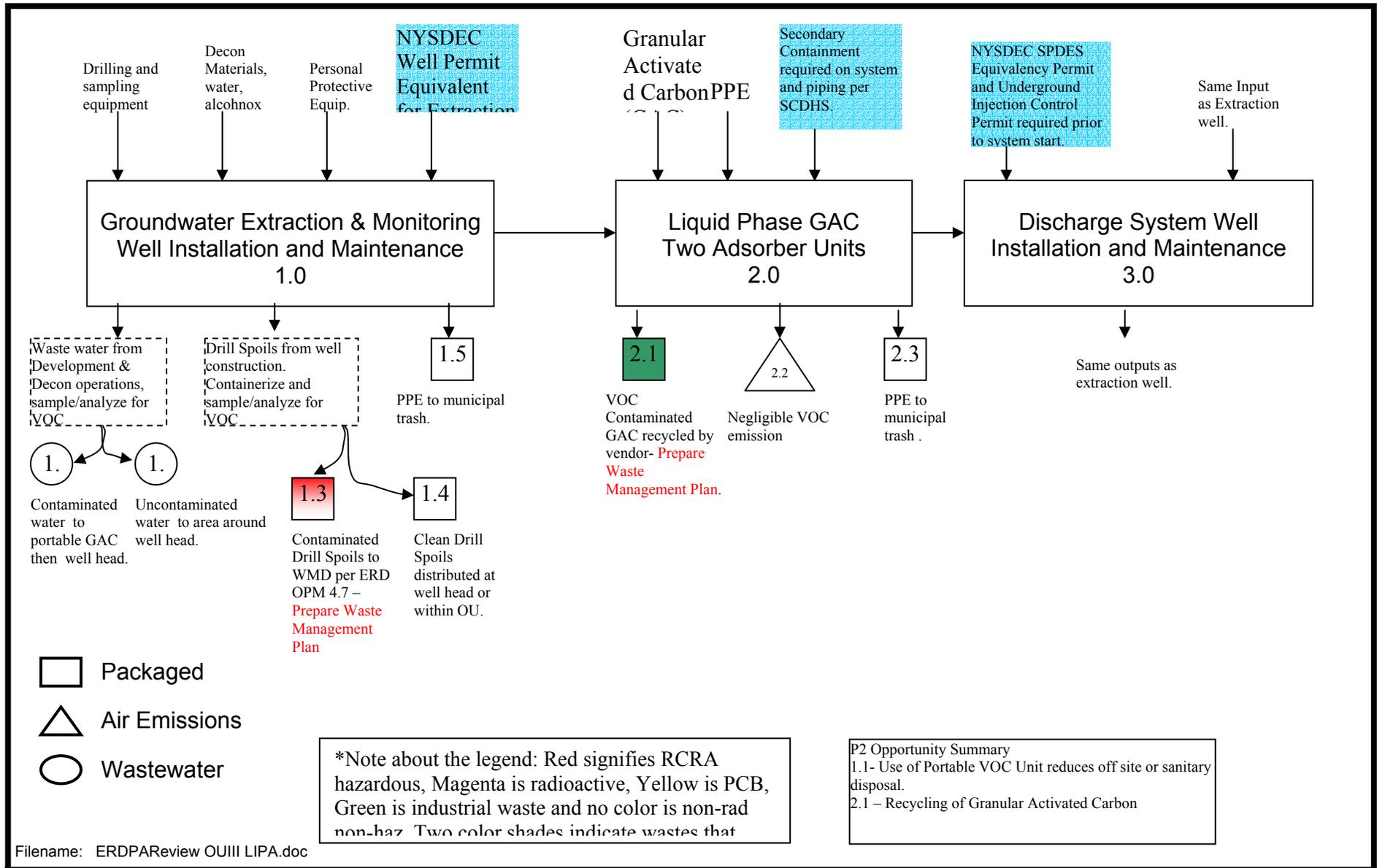
***Attachment 4***  
***Summary of EMS Program implementation to address LTS requirements***

- a. Organizational units are assigned responsibilities for new operations and/or facilities. For example, the environmental support organization's field sampling team may be assigned additional sampling and analysis tasks for EM locations which have been transferred to the LTS Program. The plant's maintenance organization may be assigned responsibility for operation and maintenance of a series of groundwater pump and treat systems which have been transferred to the LTS Program.
- b. The new operations/facilities are evaluated for activities, products and services that have a potential to significantly interact with the environment. A determination is made of those that have regulatory requirements, affect groundwater, or are related to radioactivity in any media. Those that meet the criteria are included within the scope of the BNL EMS, and managed in accordance with its requirements. It is expected that any operation or facility associated with the LTS Program will meet one or more of these criteria and therefore managed within the BNL EMS Program.
- c. An analysis of the operations will be performed using a process mapping tool (see Attachment 5). This tool identifies inputs (material usage) and outputs (products and wastes) for each operation, similar to a qualitative "mass balance". With the results, environmental professionals evaluate the compliance status of the operation, identify required and recommended inspection, assessment, and emergency preparedness measures, evaluate status of engineered and administrative controls, and identify potential pollution prevention opportunities. Adequacy of existing controls and procedural requirements is evaluated. Any procedural improvements or system upgrades are identified, prioritized, tracked and implemented.
- d. Legal and other requirements (commitments), monitoring and measurement, records and reporting requirements, are identified. Existing procedures/processes are reviewed and modified as needed to include additional requirements to ensure compliance. If necessary, new procedures/processes will be established.
- e. Responsibilities to conduct specific LTS operations and facilities are assigned to appropriate staff. "R2A2s" are reviewed and revised to reflect new responsibilities. Training and qualification requirements are reviewed and revised and assigned staff takes additional training as needed to ensure they are qualified to carry out any new environmental responsibilities.
- f. Taking into account necessary actions to achieve compliance, recommended improvements, and cost-effective pollution prevention opportunities, organizations identify annual goals and action plans for compliance, pollution prevention, and improvement. Progress on goals is monitored and reported to senior management.
- g. The organization's self-assessment program is reviewed and modified as necessary to address new operations or facilities. Inspections and audits are conducted to assess conformance to operating procedures and regulatory requirements. Results are reported to management and corrective/preventive actions developed, tracked and implemented if needed.
- h. On a periodic basis, annually at BNL, senior management performs a "self-evaluation" of their environmental program. Management evaluates the results from internal and external audits, trends in effluents, emissions, and wastes, progress on annual goals, feedback and

input from stakeholders, and other attributes as appropriate, to determine the adequacy, suitability and effectiveness of its EMS Program. Areas for improvement are identified and prioritized, and used as input to the annual goal planning process.

- i. Communication channels are established with both internal and external stakeholders. Information on the status of the environmental programs, progress and performance is provided to these target audiences on both a proactive basis as well as in response to direct inquiries.

# Attachment 5: Process Mapping Tool



BROOKHAVEN NATIONAL LABORATORY  
PROCESS MAP

## OUIII LIPA Offsite Groundwater Treatment System Environmental Process Assessment