

**Final Report
July 2008**

**PLUM ISLAND
ANIMAL DISEASE
CENTER (PIADC)**

**FACILITY
CLOSURE &
TRANSITION
STUDY**



**Homeland
Security**

Booz | Allen | Hamilton

Table of Contents

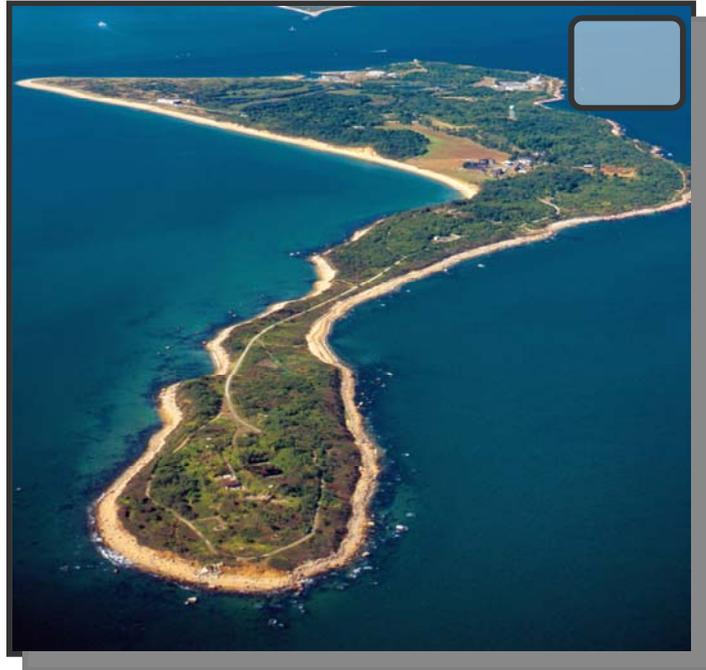
- 1 BACKGROUND AND UNDERSTANDING1**
 - 1.1 OVERVIEW OF THE PIADC FACILITY AND PLUM ISLAND INFRASTRUCTURE 1
 - 1.2 OVERVIEW OF RESEARCH REQUIREMENTS 1
 - 1.3 STUDY TASK 2
 - 1.4 OBJECTIVES 3
 - 1.4.1 *Facility Closure and Transition Considerations* 3
- 2 TASK APPROACH AND METHODOLOGY5**
 - 2.1 DEFINE SCENARIOS 5
 - 2.2 CHARACTERIZE PLUM ISLAND ASSETS: DEVELOPMENT OF A WORK BREAKDOWN STRUCTURE (WBS) 5
 - 2.3 DETERMINE WBS ACTIVITIES 9
 - 2.4 DEVELOP ACTIVITY COST AND DURATION ESTIMATES 10
 - 2.5 SYNTHESIZE TOTAL SCENARIO REQUIREMENTS 10
 - 2.6 REPORTING OF FINDINGS 11
- 3 SCENARIO DESCRIPTIONS12**
 - 3.1 SCENARIO ONE: NBAF IS CONSTRUCTED AT ONE OF FIVE MAINLAND SITES 12
 - 3.2 SCENARIO TWO: NBAF IS CONSTRUCTED ON PLUM ISLAND 14
 - 3.3 SCENARIO THREE: NBAF IS NOT CONSTRUCTED (“NO ACTION ALTERNATIVE”) 16
- 4 SCENARIO EVALUATION17**
 - 4.1 SCENARIO ONE: NBAF IS CONSTRUCTED AT ONE OF FIVE MAINLAND SITES 17
 - 4.1.1 *Program Management and Oversight* 17
 - 4.1.2 *Facility and Asset Closure Activities* 18
 - 4.1.3 *NRHP and Security* 19
 - 4.1.4 *Balance of Island* 19
 - 4.1.5 *Plum Island O&M* 20
 - 4.1.6 *Transition Activities* 21
 - 4.1.7 *Other Activities* 22
 - 4.1.8 *Scenario One Summary* 23
 - 4.1.9 *Benefits and Impacts of Site Specific NBAF locations and In-Kind NBAF Consortia Contributions* 24
 - 4.2 SCENARIO TWO: NBAF IS CONSTRUCTED ON PLUM ISLAND 26
 - 4.2.1 *Program Management and Oversight* 26
 - 4.2.2 *Facility and Asset Closure Activities* 27
 - 4.2.3 *NRHP and Security* 28
 - 4.2.4 *Balance of Island* 28
 - 4.2.5 *Plum Island O&M* 29
 - 4.2.6 *Transition Activities* 29
 - 4.2.7 *Other Activities* 31
 - 4.2.8 *Scenario Two Summary* 32
 - 4.3 SCENARIO THREE: NBAF IS NOT CONSTRUCTED, OR “NO ACTION ALTERNATIVE” 33
- 5 SCENARIO COMPARISON34**
 - 5.1 COST COMPARISON 34
 - 5.1.1 *Closure and Transition Costs* 34
 - 5.1.2 *Plum Island O&M Costs* 35
 - 5.2 INTEGRATED PROGRAM SCHEDULES 36
 - 5.3 SCENARIO COMPARISON OVERVIEW AND SUMMARY 37

1 BACKGROUND AND UNDERSTANDING

1.1 OVERVIEW OF THE PIADC FACILITY AND PLUM ISLAND INFRASTRUCTURE

The Plum Island Animal Disease Center (PIADC) facility is located on Plum Island, an 840-acre island that lies 1.5 miles from Orient Point, New York and 9 miles from Old Saybrook, Connecticut. Plum Island has played a role in America's colonial, revolutionary, and military history. Plum Island buttressed the nation's coastal and harbor defenses during the Spanish-American War through World Wars I and II. A historic lighthouse and artillery battery installations still exist on the island from these periods, as well as a substantial amount of infrastructure related to the U.S. Army's Fort Terry.

Plum Island's contribution to animal disease research dates to 1951, under the auspices of the U.S. Army Chemical Corps when the U.S. Congress appropriated funds for a new laboratory in response to outbreaks of foot-and-mouth disease in Mexico (1946) and Canada (1952). Plum Island facilities were transferred to the U.S. Department of Agriculture (USDA) and a new PIADC facility was dedicated at the site in 1954. Ownership of Plum Island and the PIADC facility were transferred from USDA to the Department of Homeland Security (DHS) in 2003. Present-day research at the PIADC facility is conducted within the 1954 constructed Biosafety Level 3 (BSL-3) containment laboratory, which has modern additions constructed during the past fifteen years attached to the original structure and the adjacent thermal decontamination plant. With the exception of primary power and telecommunications cables, Plum Island and the PIADC facility are operationally self-sufficient from mainland public utilities. The PIADC facility is supported by a complex of buildings and utility structures (located primarily within the northwest quadrant of the island) that include potable water supply and treatment, chilled water, steam generation, backup power generation, wastewater treatment, fuel storage, security and harbor operations. In addition to the assets physically located on Plum Island, DHS owns adjacent parking, warehouse, office and harbor facilities on Orient Point, NY that support PIADC operations, logistics and supply needs. This report refers to the total property and facilities portfolio of DHS ownership at both Plum Island and Orient Point, NY as the Plum Island assets.



1.2 OVERVIEW OF RESEARCH REQUIREMENTS

DHS has the responsibility and national stewardship mandate for detecting, preventing, protecting against, and responding to terrorist attacks within the United States. These DHS responsibilities, as applied to the defense of animal agriculture, are shared with USDA. The interdependence of the DHS and USDA missions requires development of a coordinated strategy to adequately protect the Nation against biological threats to animal agriculture. Consultations between DHS and USDA on a coordinated biodefense strategy as called for in Homeland Security Presidential Directive 9 (HSPD-9), "Defense of United States Agriculture and Food," have revealed an infrastructure gap that must be filled by an

integrated research, development, test, and evaluation (RDT&E) infrastructure for combating bio- and agro-terrorism threats. The Directorate of Science and Technology (S&T) is responsible for filling the gap in the Nation's biocontainment infrastructure as defined by the related homeland security efforts of DHS and USDA. The proposed NBAF will enable DHS to fulfill its mission of detecting, preventing, protecting against, and responding to bioterrorist attacks within the United States.

The Plum Island Animal Disease Center (PIADC) has historically conducted much of the research that would be conducted at the NBAF. The Homeland Security Act of 2002 recognized that protection of U.S. agriculture is a critical element of Homeland Security and transferred ownership of PIADC from USDA to DHS in 2003. Recognizing the growing need for veterinary countermeasures to protect this Nation's agricultural sector and recognizing the limitations posed by the current PIADC facility to meet this requirement, HSPD-9, directs that the "Secretaries of Agriculture and Homeland Security will develop a plan to provide safe, secure, and state-of-the-art agriculture biocontainment laboratories that research and develop diagnostic capabilities for foreign animal and zoonotic diseases." Furthermore, HSPD-9 requires that DHS, USDA, and others will "accelerate and expand development of current and new countermeasures against the intentional introduction or natural occurrence of catastrophic animal, plant, and zoonotic diseases." The Secretary of Homeland Security is responsible for coordinating these activities.

Based on bio- and agro-defense mission requirements as well as facility limitations at Plum Island, such as its limited BSL-3 space and lack of any BSL-4 space, the need was identified to enhance the U.S. Government's current research capabilities in the animal agricultural field to meet the requirements of HSPD-9. DHS therefore began exploring potential sites, in addition to its Plum Island site, for a proposed new national research and development (R&D) BSL-3 and BSL-4 asset, the proposed NBAF. The publication in the Federal Register on July 31, 2007 of the Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) began the National Environmental Policy Act (NEPA) process for the proposed NBAF.

1.3 STUDY TASK

To explore the full spectrum of issues associated with deciding if and where the NBAF would be built, DHS decided to undertake an evaluation of the impacts and costs associated with the transition of current PIADC research operations and the potential closure of the PIADC facility and related Plum Island infrastructure. DHS contracted with Booz Allen Hamilton, Inc. (Booz Allen) for the *PIADC Facility Closure and Transition Study*. This study was led by Booz Allen with support from MPR Associates, Inc. (MPR), and guidance from staff at DHS' Office of National Laboratories (ONL), PIADC, and the Federal Law Enforcement Training Center's (FLETC) Biocontainment Procurement Division. This study identified the impacts and costs of closure and transition activities, and compared how they would likely vary depending upon the selected NBAF site. **This report documents the study team's findings and is intended as information for the NBAF decision process including the development of the Record of Decision (ROD) for the NBAF.**

This study is meant to provide information regarding the impacts of Plum Island transition and potential closure activities as related to the NBAF decision. It is not meant to provide a recommended or required course of action for the PIADC facility and other Plum Island infrastructure, but rather an objective analysis of the potential closure and transition scenarios that may be implemented by DHS after the NBAF decision is made. The actions, costs, and impacts associated with the scenarios regarding PIADC closure or transition identified herein are assumptions made by the study team solely for the development of an executable path forward to develop budgetary cost estimates and implementation schedules. The closure actions that are presented in this report would constitute a separate programmatic decision and environmental action from the NBAF Decision and the NBAF EIS. As such, it is assumed that whatever

PIADC facility closure activities DHS may choose to implement in the future would be performed in accordance with NEPA and all other applicable regulations.

1.4 OBJECTIVES

The overarching goals of this study were to provide PIADC facility closure and transition costs and impacts that will be considered as part of the NBAF decision process as well as to provide DHS with a comprehensive management and budgeting tool for coordination of PIADC facility closure and transition. The actions associated with the transition of the PIADC mission are primarily dependent on the NBAF decision, which is expected to be in fall of 2008. The actions associated with closure are independent of the NBAF decision, but may be influenced by the NBAF site selection decision and the anticipated utilization of existing Plum Island infrastructure other than the PIADC research facility. Currently, there are a significant number of underutilized or abandoned assets on the 840-acre Plum Island property for which DHS is responsible, including older laboratory facilities, historic assets, and U.S. Army constructed Fort Terry infrastructure dating back more than 100 years. This study evaluated the portfolio of assets associated with Plum Island, including the PIADC facility. Based on the need to develop integrated analysis to support the NBAF decision and the need to account for closure activities of the current PIADC facility and Plum Island infrastructure, the specific objectives of the study were to:

- Define the potential PIADC facility closure and transition scenarios based upon the potential future status of Plum Island and the NBAF construction;
- Evaluate each scenario and develop the requirements for the implementation and execution of each scenario, including:
 - Activities required for the closure or re-use of the PIADC facility and other existing Plum Island infrastructure;
 - Estimated level of operations and maintenance (O&M) requirements to support any specific Plum Island operations throughout the NBAF start-up, transition, and initial operations period;
 - Transition requirements related to personnel, equipment, and program migration from the PIADC facility to the NBAF;
 - The development of budget level cost estimates and an executable implementation schedule including documentation of assumptions, constraints, and potential implementation issues; and,
- Document the findings from each scenario to provide a comprehensive analysis of the PIADC facility closure and transition impacts that are pertinent to the NBAF decision.

1.4.1 Facility Closure and Transition Considerations

In addition to the potential outcomes of the NBAF decision, there are numerous considerations that would drive the scope of closure and transition activities for the PIADC facility and associated Plum Island infrastructure described above:

- **Ongoing DHS Responsibility for Maintaining Non-Research Related Plum Island Infrastructure**

As previously described, a portion of the existing infrastructure on Plum Island was constructed by others during the first half of the 20th century and is not currently utilized or mission critical to PIADC facility research operations. In addition, some of the 1950s era research-support infrastructure and utilities have been replaced with modern equipment and are no longer in use including a laboratory facility and a power

plant. All of this unused infrastructure falls under DHS responsibility and requires varying levels of action under each of the closure scenarios (refer to Chapter 3 for additional information). Such actions may include asbestos removal and potential demolition activities to ensure environmental and physical safety for future use of the site.

➤ **Ability of Plum Island Infrastructure to Support Future Operations**

Other than the PIADC facility and utilities that directly support its operation, many of the abandoned buildings have deteriorated to the point that they can not safely support any future use by DHS or other potential future user. Although Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions have been performed to address the majority of the site-specific environmental hazards, the structures themselves may contain asbestos, lead, and potentially other hazards that would likely require abatement.

The PIADC facility's ability to meet the current research requirements has been assessed and necessary facility modifications are underway to extend its useful life. As discussed within Chapters 3 and 5 of this report, this assumption is based upon the analysis from the 2006 *PIADC Research Needs and Project Prioritization Study* and upon completion of construction activities resulting from that study. It is assumed that, from a technical perspective, the PIADC facility will be able to operate until approximately 2016-2019 (based either on the 2006 study or 2009 completed implementation of the study's recommendations). The ability to successfully support operations beyond this date has not been evaluated.

➤ **Biological Decontamination of Current and Historic Research Facilities and Support Infrastructure**

Standard laboratory procedures and regular decontamination activities continue to be performed in order to ensure that virus and pathogen materials are not released from the laboratory facility and to prevent cross contamination between experiments. Closure activities would require the comprehensive decontamination of all laboratory-related facilities in accordance with an approved decontamination plan. This includes the currently operating PIADC facility and associated thermal decontamination facility, and the non-operating laboratory facilities from past operations.

2 TASK APPROACH AND METHODOLOGY

A systematic approach was defined and executed to meet the specific study objectives, beginning with the identification of the potential closure and transition scenarios that DHS may choose to implement following the NBAF decision. These scenarios were the basis of the data gathering and analysis techniques performed to determine the scope of closure and transition activities, to estimate the cost and duration of each individual activity, and to synthesize the individual activities into an integrated schedule. This systematic approach was applied to each potential scenario. Figure 2.1 summarizes the structured approach:



Figure 2.1: Methodology Summary

Each step in the methodology is explained in more detail in the following section.

2.1 DEFINE SCENARIOS

The study team defined three scenarios for PIADC facility closure and transition, in coordination with the NBAF decision. The scenarios were defined by the study team to ensure a comprehensive and objective closure and transition evaluation. Fully defining these scenarios was a critical step in the evaluation process.

The specific scenario descriptions, including associated assumptions and constraints, are described in Chapter 3 of this report. The scenarios are identified as follows:

- Scenario One: NBAF is constructed on one of five mainland sites;
- Scenario Two: NBAF is constructed on Plum Island; and
- Scenario Three: NBAF is not constructed (“No Action Alternative” as defined in the NBAF EIS).

These scenarios identify potential end-states of the PIADC facility and Plum Island infrastructure, and form a framework for evaluating the PIADC facility closure and transition requirements. Since each scenario had a different set of closure and transition requirements that impacts costs and scheduling, each scenario was evaluated separately.

2.2 CHARACTERIZE PLUM ISLAND ASSETS: DEVELOPMENT OF A WORK BREAKDOWN STRUCTURE (WBS)

The closure and transition activities for each aspect of the study may vary when evaluated against each scenario’s requirements. In order to identify, manage, and compare these variances, it was important to maintain a common structure throughout each scenario. To accomplish this, the study team developed a WBS to systematically and comprehensively evaluate all aspects of each scenario’s closure and transition requirements. A WBS is an organizational structure and data repository that categorizes, stores, and aggregates various levels of information. Scheduling software was used to store and manage the WBS data.

The WBS provided a foundation for systematically evaluating each of the Plum Island assets and all of the potential associated activities across the three scenarios. The WBS and the scheduling software used to store the WBS allowed the study team to systematically:

- Identify and categorize all closure and transition criteria and Plum Island assets including facilities, utilities, and structures;
- Define and document the scope of closure and transition activities required for all criteria and assets in each scenario, including cost and schedule information; and,
- Integrate and escalate activity cost and duration data so that each scenario could be uniformly evaluated against one another.

A summary of the WBS framework developed for the study is shown in Figure 2.2.

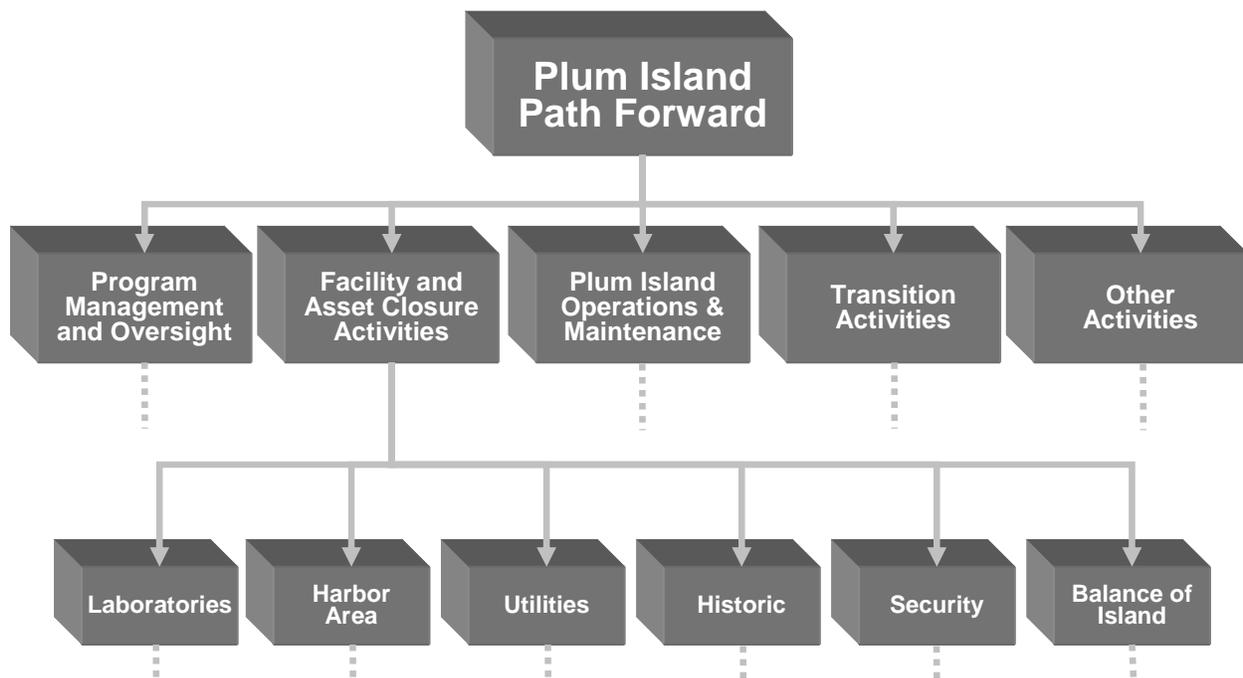


Figure 2.2: WBS Summary

As detailed in Figure 2.2, the WBS has five major categories used to identify all activities necessary to implement the closure and transition components of each scenario. The five major WBS categories are defined as follows:

1. Program Management and Oversight

This WBS category includes activities required to be performed internally by DHS to effectively develop implementation strategy, initiate planning activities, and procure and manage contracts for the closure and transition process. The secondary levels of this activity are utilized to prioritize such tasks as conceptual planning and strategy development (of which, this study is a component), programming, and budgeting activities (such as the development of a Project Execution Plan, a Project Management Plan, an Acquisition Plan and meeting funding milestone requirements). Lower-tier components of this category contain specific owner-level activities with cost and schedule impacts that are necessary to implement the overall scenario including:

- Plan development efforts in advance of transition and closure activities including:
 - Sample and Vaccine Materials Inventory, Risk Assessment and Migration Plan;
 - Lab Equipment Inventory, Valuation Migration, and Procurement Plan;
 - Laboratory Supplies and Consumables Inventory and Management Plan;
 - Hazardous and Chemical Inventory and Management Plan;
 - Radiological Materials Inventory and Management Plan;
 - Personnel Training and Migration Plan; and,
 - Regulatory and Permit Evaluation Planning and Execution.
- Survey, design, and contract procurement, management and oversight activities including:
 - Construction Management/Project Management Costs;
 - Asbestos Survey and Design;
 - Procurement of Transition Materials and Shipping Contract;
 - Procurement of Biodecontamination Contract;
 - Procurement of Asbestos Abatement and Disposal Contract;
 - Procurement of Asbestos Monitoring and Oversight Contract;
 - Procurement of Laboratory Environmental/HazWaste Contract;
 - Procurement of Architecture/Engineering Contract for Demolition Services;
 - Procurement of Demolition Services Contract;
 - Procurement of Petroleum-Impacted Soils Remediation Contract; and,
 - Procurement of Waste Disposal Contract.

2. Facility and Asset Closure Activities

This WBS category addresses the complete inventory of every facility and structure on Plum Island. At the primary level of this category, assets are categorized as they relate to the island function, including a breakdown of all facilities and structures associated with Plum Island. As identified in Figure 2.2, these categories include:

- **Laboratories:** This is the current operating PIADC facility laboratory and adjacent components.
- **Harbor Area:** The harbor area includes all infrastructure and assets associated with both the Plum Island harbor operations and all Orient Point, NY operations.
- **Utilities:** Utilities include all utilities that support infrastructure throughout Plum Island, both active and abandoned.
- **Historic:** Assets identified as registered or eligible for listing on the National Register of Historic Places (NRHP).
- **Security:** All security specific assets on Plum Island. For the purposes of this study, it was assumed that no cost or schedule impacts are associated with these assets.
- **Balance of Island:** All other Plum Island infrastructure that are not identified above, inclusive of U.S. Army Fort Terry facilities, past laboratory facilities, and any other structure identified as an asset associated with Plum Island.

Each specific facility, structure or physical asset that is a part of the Plum Island portfolio is included in one of the above categories.

3. Plum Island Operations & Maintenance (O&M)

This WBS category captures the O&M costs necessary to operate and maintain not only the PIADC facility, but all aspects of Plum Island operations. This study addresses only total Plum Island O&M costs. Individual cost components that constitute the total O&M cost (e.g. ferry operations costs) are not individually considered or evaluated. Due to the integrated nature of the current contracted services for PIADC O&M needs, DHS IT and Security requirements, and changes to fuel and utility market rates, O&M costs presented within this report were directly correlated to current and projected funding requirements as determined by DHS and provided to the study team. For future years that the PIADC facility would be assumed to be operational, out-year budgets beyond 2014 have been calculated at a linear increase at a rate equal to the average increase of the current five year budget projections. For years that the scenario assumed that PIADC research operations would no longer be performed, out-year budgets have been calculated at a percentage of the total cost to account for limited necessary O&M services such as ferry and utility operations.

The Plum Island O&M costs estimates are provided to guide potential DHS budget plans and are not included in the PIADC closure and transition total program cost estimate. NBAF O&M costs have been estimated by the NBAF Design Partnership (NDP) in the *NBAF Site Cost Analysis (June 2008)*.

4. Transition Activities

This WBS category includes all aspects of transitioning current research programs and personnel from the PIADC facility to the NBAF (whether NBAF is at Plum Island or a mainland site). These activities are necessary to ensure full continuity of operations as PIADC operations are incrementally transferred to the NBAF. Transition activities address the physical relocation of materials, equipment, and personnel, personnel training, and termination of a Nuclear Regulatory Commission (NRC) license. Successfully implementing this WBS component will require planning, coordination and funding from all operating entities (DHS, USDA Animal and Plant Health Inspection Service (APHIS) and USDA Agricultural Research Service (ARS)). Transition costs for which USDA will be responsible have been included and identified in this study.

5. Other Activities

This WBS category captures those costs that were identified by DHS or by other NBAF studies. These costs have been separated from the cost estimates that were evaluated and estimated by the project team so that they could be maintained as separate line items without any application of escalation or contingency factors.

The costs that were included are:

- (1) GSA costs for disposition of the Plum Island property, and
- (2) Procurement of new “loose” scientific equipment.

DHS provided the study team with the estimated cost (based on preliminary discussions between DHS and GSA) of GSA transaction fees that would be incurred to pursue the potential sale of Plum Island. Please note that an appraisal of the fair market value of Plum Island is not included in the scope of this study, so any benefits to DHS in terms of sale proceeds are not evaluated.

The total cost for new loose scientific equipment – that is equipment that is not hard piped, wired or otherwise affixed to the NBAF structure and that can be purchased and installed after the facility is constructed – was estimated by NDP in the *NBAF Site Cost Analysis*. Since the cost of loose scientific equipment is not included in the construction program cost estimate, it has been included as part of the total closure and transition program cost, based on the cost provided in the

NBAF Site Cost Analysis. The burden of this cost is separate from the DHS NBAF construction budget and will be shared by the USDA and DHS research program budgets. The specific allocation of these shared costs will be determined during the NBAF detailed design and construction period following the NBAF Decision.

2.3 DETERMINE WBS ACTIVITIES

Following the development of the WBS and populating it with all of the required primary and lower-tier components, a structured approach was applied to evaluating each of these components to determine what activities need to be accomplished to reach the defined scenario’s end-state. This process was facilitated through the application of decision trees for each of these specific WBS categories. An example of the Facility and Asset Closure Activities decision tree is shown in Figure 2.3.

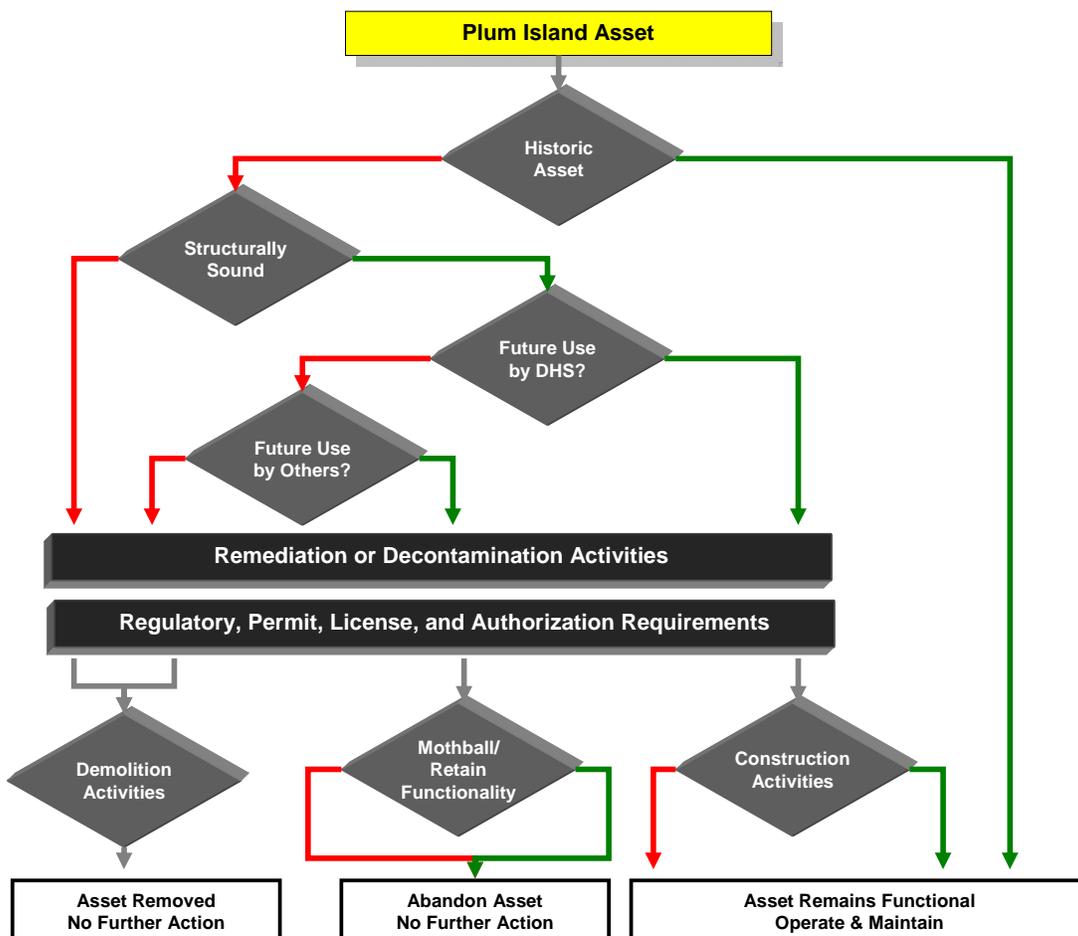


Figure 2.3: Facility and Asset Closure Activities Decision Tree

Evaluating each asset for each scenario through the application of the decision tree resulted in:

- Capturing the closure or transition activities that require cost estimates and durations;
- Defining the proposed end-state of the asset; and,
- Documenting assumptions that were made during this process.

2.4 DEVELOP ACTIVITY COST AND DURATION ESTIMATES

After the scope of activities required for closure and transition of all three scenarios was identified and captured in the WBS, cost estimates for primary and lower-tier WBS component activities were developed. Based upon the available data for each asset and the associated activity, cost estimates were developed by either stochastic or deterministic methods. The time duration required to complete each activity was estimated for later integration into the overall scenario cost estimate and implementation schedule.

Activity base costs were estimated using 2008 rates and were adjusted to include the “Plum Island Factor” to account for the increased cost associated with performing work on an island. This factor is based on USDA and DHS construction and operations experiences at Plum Island. In addition, all cost estimating was performed in accordance with the Association of the Advancement of Cost Engineers (AACE) Classification System identified in the AACE International Recommended Practice No. 17R-97. In accordance with this practice, the cost estimates provided in this study are intended for a budget or control end usage and were developed with a combination of stochastic and deterministic methods. Therefore, this estimate should be considered a Class 3 estimate with an expected accuracy range of -30%/+60%. In order to ensure consistent reporting, all costs are provided at the conservative end of this range at 60% greater than the base estimate rate.

The only costs that are not escalated or adjusted in any way are the “Other Activity” costs that were provided to the project team by NDP and DHS. These costs are included as provided by DHS and are maintained as separate line items apart from the costs evaluated and estimated by the project team.

Also, the PIADC closure and transition total program cost estimates in this study include both USDA and DHS costs. Costs for which USDA is solely responsible or costs that will be shared by USDA and DHS are identified within this study.

2.5 SYNTHESIZE TOTAL SCENARIO REQUIREMENTS

In order to provide the true overall cost and implementation schedule for each scenario, all WBS components and their activities must be properly sequenced to provide an executable schedule. Therefore, upon completing the identification of all activities and developing cost estimates and durations for each, the individual components were integrated into an overall implementation program for each scenario. Major program components were evaluated to determine the proper sequencing of activities, and the specific events that drive the implementation timing of closure and transition activities were identified. The sequenced closure and transition activities were aligned within an integrated and executable schedule that conformed to each scenario’s definition. Based on this executable schedule, the activity costs were escalated from the 2008 base rate to the implementation year for that activity in the schedule. Escalation was applied within a range of 2.5% to 5.0% per year as appropriate for the specific cost component of the activity. The executable schedule developed for each scenario assumed that all work activities can be accomplished according to an optimum contracting schedule to determine the shortest practical and achievable timeframe.

All costs are provided to reflect the estimated funding need for the performance period identified in each scenario, or “budgetary” values. The study does not provide an evaluation of the Net Present Value (NPV) or account for Office of Management and Budget (OMB) discount rates. Significant postponement of scenario implementation as presented may require further evaluation to determine the impact of escalation and inflation on the deferred program.

2.6 REPORTING OF FINDINGS

With a structured approach in place, the process of developing and evaluating each scenario was undertaken. The following chapters document the study team's results:

- Chapter 3: Descriptions of the three scenarios;
- Chapter 4: Individual scenario evaluation including costs and integrated schedules. Cost estimates provided in this report are an aggregate of the specific WBS component activities for each scenario. They include adjustments as identified above to address the 'Plum Island Factor', estimate accuracy range as defined by AACE, and escalation; and,
- Chapter 5: Scenario comparison and summary.

3 SCENARIO DESCRIPTIONS

For study purposes, DHS identified three potential end state scenarios that may result from the NBAF decision and thereby drive future closure and transition requirements for Plum Island. Through this study, each of the three scenarios were evaluated to identify and assess specific closure and transition activities, ranging from impacts on current operations to final disposition of Plum Island assets. The primary assumption driving the evaluation is that the current Plum Island research capability is insufficient to meet DHS's evolving mission requirements as discussed previously in this report. This study does not assert that any of the specific scenarios outlined below be implemented as a required course of action, rather they are presented solely as assumptions utilized to bound the analysis of each scenario. DHS and USDA research program requirements, operational needs, and management decisions will ultimately define the future use of the PIADC facility and implementation of any of these scenarios, either in whole or in part. The three end state scenarios are as follows:

- Scenario One: NBAF is constructed at one of five mainland sites
- Scenario Two: NBAF is constructed on Plum Island
- Scenario Three: NBAF is not constructed (“No Action Alternative” as defined in the NBAF EIS).

A description of each scenario, including associated PIADC closure and transition assumptions or constraints, are provided below.

3.1 SCENARIO ONE: NBAF IS CONSTRUCTED AT ONE OF FIVE MAINLAND SITES

Scenario Overview: In Scenario One, DHS's decision would be to construct NBAF at one of five mainland sites, requiring transition of current research programs from the PIADC facility to the NBAF and performance of closure activities on Plum Island. The mainland sites under consideration are in Athens, GA; Manhattan, KS; Flora, MS; Butner, NC; and San Antonio, TX. In this scenario, it is assumed that the NBAF will be successfully operating by January 1st, 2015, at which time the last remaining PIADC research programs would cease. Prior to that date, there may be a short duration of overlapping research activities between the current and new locations as the NBAF is fully commissioned. Once the NBAF is constructed at a mainland site and is ready for occupancy, all DHS and USDA research programs at the PIADC facility would transfer to the NBAF. Since NBAF construction will occur at a mainland site, Scenario One assumes closure activities for non-essential assets would be pursued prior to NBAF completion on January 1st, 2015, thus limiting continued operation of the ferry and O&M support operations once research has ceased.

End State Description: Since all DHS and USDA research activities would be relocated to a NBAF mainland site, it is assumed that DHS would no longer have a need to operate any of the current Plum Island assets and would likely look to transfer ownership responsibilities to a new entity. For the purposes of this scenario, it is assumed that a transfer would be unconstrained and an entity could include other federal, state or private parties. Therefore, this scenario assumes that DHS would take all actions necessary in order to facilitate a property transfer in which DHS would no longer have any ongoing responsibilities or liabilities for the Plum Island asset portfolio. DHS would stabilize certain assets that add value to a future owner thereby providing for potential future operability by the next Plum Island owner. This includes assets such as the utility buildings and structures, utility transmission lines, historic buildings, and harbor structures.

Liability Mitigation: Prior to potentially transferring Plum Island to a new owner, DHS would need to completely absolve itself of Plum Island ownership responsibilities and potential liabilities. DHS has been and continues to be proactive in reducing and remediating environmental liabilities throughout Plum

Island, as part of a long-term owner's strategy. This scenario assumes that DHS would develop a strategy to expedite addressing existing liabilities to facilitate the due diligence required to support a property transfer of this magnitude.

The historic and current operation of Plum Island facilities has resulted in a range of potential liabilities, such as petroleum contamination in soils and the use of hazardous or controlled materials in active and abandoned laboratory spaces, which will be managed as discussed below. The abatement of asbestos-containing materials was assumed to be required at most facilities, both active and abandoned. In addition, many buildings on Plum Island have been abandoned for quite some time, and some have deteriorated to the point of being structurally unsound. Any buildings that are structurally unsound would require demolition and disposal or reuse of the associated debris.

Closure Activities: Closure activities for Plum Island laboratory spaces would require an assessment and remediation of any hazardous materials resulting from research activities and removal of laboratory equipment that may contain hazardous materials. All buildings involved in biological research activities or where biological waste was treated would be decontaminated, demolished, and completely removed from Plum Island in order to alleviate any potential concern of persistent or perceived hazards that could detract from realizing the full future potential of the property. In addition, remediation activities will be completed as necessary to appropriately address areas of concern.

Transition Activities: DHS will develop a comprehensive plan to successfully coordinate and transition mission operations from the PIADC facility to the NBAF. A chemical inventory and procurement management process will be implemented to coordinate equipment and consumable material needs for both the existing and new locations. In addition, the PIADC facility uses specialized equipment that may still hold value at the new facility which will be fully addressed in the transition plan. Existing samples, pathogens, and vaccine bank materials that are stored in ultra-low freezers and liquid nitrogen will require careful planning and attention during the transition off the island. Personal property from PIADC will either be transferred to the new facility or excessed in accordance with approved procedures for government surplus supplies and equipment

To address personnel transition requirements, Scenario One assumes that staff will require some level of training prior to operating the NBAF. In accordance with the CDC's Biosafety in Microbiological and Biomedical Laboratories guidance document, it requires that laboratory and support personnel receive appropriate training on the potential hazards associated with the work involved, and additional training as necessary for procedural or policy changes. With personnel needing to address the significant procedural changes associated with a new facility (e.g. operating new equipment, BSL-4 operations, etc.), training will be a vital component to ensure safety and provide for the efficient start-up of the NBAF. The specific training requirements are largely determined by the facility, but it is assumed that NBAF staff would require a minimum of 80 hours of dedicated BSL-4 procedural and safety training at an recognized training center. It is assumed that in addition to dedicated offsite training, start-up and initial operations of the NBAF would require the development of site-specific laboratory and emergency planning procedures. NBAF staff would need to be knowledgeable and practiced in these procedures prior to the initiation of full research operations at NBAF. Although the development and practice of these procedures would be largely accomplished within the day to day operations of the staff (and therefore outside of the scope of this study), this study does provide for additional support to facilitate the one time development and implementation of these procedures during the transition period.

As a transition activity component, Scenario One assumed the relocation of all federal DHS and USDA staff in accordance with DHS human resources reimbursement policies as a component of the transition activities. USDA employees are assumed to have the same relocation allowance costs as DHS employees since no data was available from USDA at the time of this report. USDA would be responsible for the costs of relocating its employees. Although it is likely that a percentage of existing federal employees would choose a Voluntary Early Retirement Authority/Voluntary Separation Incentive Pay (VERA/VSIP)

program rather than relocation, DHS is not currently offering compensation through these programs. For more information, see additional discussion in Section 4.1.6 of this report.

Ongoing research programs will be transitioned from PIADC to the NBAF once adequate training and NBAF commissioning and start-up are complete. Migration planning activities will be instituted to provide a sufficient reduction period for non-critical and long-term research programs to be completed or reach such milestones that the program can be paused until relocated directly to the completed and fully operational NBAF. Critical programs and capabilities, such as diagnostic services, will continue to be performed at PIADC until identical capabilities have been developed and are operational at the NBAF. All research programs will be transitioned from PIADC directly to the NBAF without the need for intermediate or swing space. Both PIADC and NBAF would be operational for a period of time until all mission operations have relocated to the NBAF. During this time, key personnel will be required at both the PIADC and at the new NBAF location. The employee relocation assumptions include allowances for personnel per diems to cover additional travel expenses between PIADC and NBAF.

This study assumed there are no site-specific factors that would affect the transition cost of relocating mission operations from the PIADC facility. Each mainland site is assumed to have the same transition cost. The benefits and impacts of site specific NBAF locations are discussed in Section 4.1.9 of this report.

Future O&M Costs: Once mission operations have transitioned to the NBAF mainland site, DHS would still need to pay for limited Plum Island O&M costs to facilitate the completion of closure activities to remove potential liabilities. O&M costs will include maintenance of historic assets, providing reduced ferry operations to the island, providing limited security and surveillance measures, and supplying a smaller maintenance crew to keep select Plum Island facilities operable such as the administration building. Following the completion of closure activities and stabilization of specific assets, DHS O&M costs would be limited to minor maintenance and upkeep of the historic assets as necessary until ownership of the island is transferred.

Other Activities: After all closure activities have been completed to remove potential DHS liabilities, the Plum Island property and all remaining assets can be sold to a new owner. All property disposition activities for transferring Plum Island to a new owner will be performed by GSA and be reimbursed by DHS. GSA transaction fees would include costs related to legal requirements, regulatory compliance and sale of the property. An appraisal of the fair market value of Plum Island is not included in the scope of this study, so any benefits to DHS in terms of sale proceeds have not been evaluated.

The procurement of loose scientific equipment was identified by NDP in the *NBAF Site Cost Analysis* and is not included in the NBAF construction program cost estimate, so it has been incorporated as part of the total closure and transition program cost. The burden of this cost is separate from the DHS NBAF construction budget and will be shared by the USDA and DHS research program budgets. The specific allocation of these shared costs will be determined during the NBAF detailed design and construction period following the NBAF Decision.

3.2 SCENARIO TWO: NBAF IS CONSTRUCTED ON PLUM ISLAND

Scenario Overview: In Scenario Two, DHS's decision would be to construct the NBAF on a Plum Island site, requiring transition of current research programs to the selected on-island location. As with Scenario One, it was assumed that the NBAF will be operating by January 1st, 2015, at which time the last remaining PIADC research programs would cease. Prior to that date, it is expected that there may be a short duration of overlapping research activities between the current and new location as the NBAF is commissioned. Once the NBAF is constructed on Plum Island and is ready for occupancy, all DHS and USDA research programs at the PIADC facility would transfer to the NBAF. The actual closure activities

would be carefully phased with the NBAF construction activities to maximize efficiency and utilization of limited island resources and infrastructure required for NBAF construction. Therefore, Scenario Two assumes that no physical activities associated with the scenario's defined closure activities would be pursued prior to the NBAF completion on January 1st, 2015.

End State Description: If the decision is made to construct the NBAF on Plum Island, DHS has determined that there would be reuse of Plum Island utility and harbor assets to the extent feasible. However, the existing laboratory and much of the Balance of Island infrastructure is assumed to have no future value due to age and will undergo closure activities similar to Scenario One. The NBAF facility will construct a new Central Utility Plant (CUP) with the reuse of the existing utilities serving as a back-up power supply. Specifically, the existing power plant would directly offset the need for steam and emergency back-up power generation and surge or redundant steam capacity for the NBAF. Reuse of the existing 55,000 square feet of administrative/office space is planned to provide a working area in support of the NBAF mission needs which does provide a marginal offset to the costs of the NBAF both during construction and continuing into operational life (costs are addressed by NDP in the *NBAF Site Cost Analysis*). Recently completed and ongoing upgrades at Plum Island would provide only limited value to the NBAF, primarily related to infrastructure upgrades to the water treatment and distribution system. Upgrades that are integrated with the laboratory facility would not provide any benefit or offset to the NBAF.

Liability Mitigation: As in Scenario One, closure activities are required for Plum Island assets to minimize liabilities and reduce the number of non-essential assets that DHS must continue to maintain. Accordingly, this scenario accounts for closure and removal of assets that pose potential liabilities and concerns associated with continued degradation of abandoned facilities, including asbestos abatement. However, as DHS would continue to own and utilize much of the existing infrastructure, limited or no mothball activities are anticipated to stabilize the current condition of the assets for potential future use.

Closure Activities: Closure activities for the Plum Island laboratory spaces would require an assessment and elimination of any hazardous conditions resulting from research activities and removal of laboratory equipment that may contain hazardous materials. All buildings involved in biological research activities or where biological wastes were treated would be decontaminated, demolished, and completely removed from Plum Island in order to fully alleviate any potential concern of persistent or perceived hazards and limit the maintenance burden of NBAF operations on Plum Island. In addition, remediation activities will be completed as necessary to appropriately address areas of concern.

Transition Activities: The requirements for transition of mission operations from the PIADC facility to the NBAF located on Plum Island presents the opportunity to transport materials and equipment in a more efficient manner. However, an inventory and procurement management process would still be needed to coordinate equipment and consumable material needs for both the existing and new locations. As in Scenario One, specialized equipment that may still hold value at the new facility will be addressed in the transition plan. Existing samples, pathogens, and vaccine bank materials that are stored in ultra-low freezers and liquid nitrogen at the PIADC facility would require less effort to relocate to an adjacent location. Personal property from PIADC will either be transferred to the new facility or excessed in accordance with approved procedures for government surplus supplies and equipment.

To address personnel transition requirements, Scenario Two assumes that the same level of training will be required for NBAF staff as in Scenario One. Whether constructed at a mainland location or on Plum Island, the same training requirements will be necessary to address new procedures, equipment and facility operations at the NBAF. However, in this scenario, relocation of existing DHS federal employees would not need to be accomplished.

Similar to Scenario One, ongoing research programs will be transitioned from PIADC to the NBAF once adequate training and NBAF commissioning and start-up is complete. Migration planning activities will

be instituted to provide a sufficient reduction period for non-critical and long-term research programs to be completed or reach such milestones that the program can be paused until relocated directly to the completed and fully operational NBAF. Critical programs and capabilities, such as diagnostic services, will continue to be performed at PIADC until identical capabilities have been developed and are operational at the NBAF. Both PIADC and NBAF would be concurrently operational for a period of time until all mission operations have relocated to the NBAF. However, these joint operations present a logistical challenge in this scenario by placing an operational burden on the limited infrastructure and resources of Plum Island. Specifically, existing shared infrastructure such as the harbor facilities, roads, the potable water aquifer recharge capacity and available areas for staging present the greatest limitations. Utilization of these resources would have to be closely coordinated during NBAF construction, commissioning, and start-up operations. A gradual and extended transition period should be planned so as not to exceed the capacity of the infrastructure and should be evaluated during the NBAF detailed design period.

Future O&M Costs: Once mission operations have transitioned to the NBAF, all O&M costs to operate and maintain Plum Island ferries, historic facilities, infrastructure, and utilities would be assimilated into the NBAF program O&M.

Other Activities: Scenario Two would ensure that Plum Island remains a DHS asset for the foreseeable future and therefore does not provide for the sale or transfer of Plum Island. Unlike Scenario One, there is no potential financial gain to DHS by selling Plum Island.

As in Scenario One, the procurement of loose scientific equipment has been incorporated as part of the total closure and transition program cost. The burden of this cost is separate from the DHS NBAF construction budget and will be shared by the USDA and DHS research program budgets. The specific allocation of these shared costs will be determined during the NBAF detailed design and construction period following the NBAF Decision.

3.3 SCENARIO THREE: NBAF IS NOT CONSTRUCTED (“NO ACTION ALTERNATIVE”)

In Scenario Three, DHS’s decision would be to not construct the NBAF at any of the six proposed sites, referred to as the “No Action Alternative” as defined by the NBAF EIS. This alternative would require that the PIADC facility continue to operate at its current BSL-3 operations. Resulting impacts of the “No Action Alternative” on the Nation’s agro-defense programs, meeting objectives set forth in Homeland Security Presidential Directives, and research on foreign animal and zoonotic diseases are outside the scope of this document.

Under the “No Action Alternative”, there would be no closure or transition costs and DHS would continue to operate the PIADC facility for an undetermined period of time. Additional detail regarding this assumption is provided in the Scenario Evaluation in Chapter 4. This report makes no claims about the improvements and facility replacements that would be necessary for the PIADC facility to maintain its ability to perform current mission requirements.

4 SCENARIO EVALUATION

This chapter includes an evaluation of each scenario related to the five WBS categories (Program Management and Oversight, Facility and Asset Closure Activities, Plum Island O&M, Transition Activities, and Other Activities), as well as, a summary evaluation of each scenario. The evaluation lists the recommended activities for closing Plum Island assets or transitioning mission operations, and provides the anticipated schedule and cost for each of these activities. Summary costs are provided for each WBS category and the entire scenario. The total scenario summary shows anticipated budget needs by year.

4.1 SCENARIO ONE: NBAF IS CONSTRUCTED AT ONE OF FIVE MAINLAND SITES

For scheduling and cost estimating purposes, this study assumed the following timeline for the NBAF at a mainland site:

1. The NBAF is constructed, commissioned, and completely operational in 2014. All operations at the PIADC facility would transition to the NBAF facility by the end of 2014.
2. All research operations at the PIADC facility cease on January 1, 2015. Closure activities would begin on this date for the PIADC facility and other Plum Island assets that supported PIADC research operations.

4.1.1 Program Management and Oversight

The total Owner’s Costs for Scenario One of [REDACTED] covers the costs for managing the closure and transition activities for the period from September 2011 through September 2017. In addition, contract and project management costs of [REDACTED] are required for the oversight and execution of all work.

To ensure that the closure and transition activities can occur within the estimated schedule, [REDACTED] is required for study and planning purposes beginning in September 2011. This cost includes an asbestos survey in 2013, at a cost of [REDACTED] to verify the actual scope of asbestos abatement that is required.

The total Project Management cost for these services is [REDACTED].

Project Management Costs			
Management Activity Cost	Duration		Cost
Owner’s Costs	Sep-2011 to Sep-2017	6 years, 1 month	[REDACTED]
Study/ Planning Costs	Sep-2011 to Dec-2014	3 years, 4 months	[REDACTED]
Contract Management	Jun-2013 to Sep 2017	4 years, 4 months	[REDACTED]
Total Project Management Costs			[REDACTED]

4.1.2 Facility and Asset Closure Activities

Closure activities for the functioning laboratory and its supporting facilities begin in January 2015, after operations have transitioned to a mainland NBAF, and are completed in July 2017. The total duration of closure activities for the laboratory area is 2 years and 7 months. Since research activities were conducted in the laboratory facility, there are significant biocontamination and hazardous material removal costs incurred in addition to asbestos abatement, demolition, and disposal costs. The [REDACTED] cost of the PIADC facility constitutes nearly half of the total Scenario One closure costs.

Laboratory Area – Closure Costs			
Closure Activity	Activity Duration		Cost
Biodecontamination	Jan-2015 to Apr-2015	4 months	[REDACTED]
Asbestos/ Hazardous Material Abatement	May-2015 to Mar-2016	11 months	[REDACTED]
Demolition/ Mothball	Jan-2015 to Jul-2017	2 years, 7 months	[REDACTED]
Remediation/ Recycling/ Disposal	Mar-2017 to Jun-2017	4 months	[REDACTED]

Total Closure Costs for Laboratory Area [REDACTED]

Closure activities for the harbor area facilities begin in October 2014 and are completed in April 2016, a total duration of 1 year and 7 months. The total cost of closure activities for the harbor area is [REDACTED] and includes asbestos abatement, demolition of structurally unsound buildings, and mothballing remaining buildings.

Harbor Area – Closure Costs			
Closure Activity	Activity Duration		Cost
Biodecontamination	n/a	n/a	[REDACTED]
Asbestos/ Hazardous Material Abatement	Nov-2014 to Jan-2015	3 months	[REDACTED]
Demolition/ Mothball	Oct-2014 to Apr-2016	1 year, 7 months	[REDACTED]
Remediation/ Recycling/ Disposal	Mar-2016 to Mar-2016	1 month	[REDACTED]

Total Closure Costs for Harbor Area [REDACTED]

Closure activities for the utility infrastructure begin in August 2014 and are completed in May 2017, a duration of 2 years and 10 months. The cost of closure activities for the utility infrastructure is [REDACTED] and includes biodecontamination of the sewage decontamination facility, asbestos abatement, demolition of the sewage decontamination facility and old power plant (including removal of petroleum-contaminated soil near these buildings), and mothballing remaining buildings.

Utilities – Closure Costs			
Closure Activity	Activity Duration		Cost
Biodecontamination	Jan-2015 to Mar-2015	3 months	[REDACTED]
Asbestos/ Hazardous Material Abatement	Oct-2014 to Apr-2015	7 months	[REDACTED]
Demolition/ Mothball	Aug-2014 to May-2017	2 years, 10 months	[REDACTED]
Remediation/ Recycling/ Disposal	Feb-2016 to Jun-2016	5 months	[REDACTED]

Total Closure Costs for Utilities [REDACTED]

4.1.3 NRHP and Security

NRHP and security costs are incorporated into Plum Island O&M costs and were assumed to be maintained beyond the operational period of the PIADC Facility by a new owner. Therefore, no additional closure or transition costs, or schedule items were associated with these assets.

4.1.4 Balance of Island

Closure activities for the ‘balance of island’ facilities begin in June 2014 and are completed in May 2016, a total duration of 2 years. The total cost of closure activities for the ‘balance of island’ facilities is [REDACTED] and includes biodecontamination of the old laboratory facility, asbestos abatement, demolition of the old laboratory facility and structurally unsound buildings, and mothballing remaining buildings.

Balance of Island – Closure Costs			
Closure Activity	Activity Duration		Cost
Biodecontamination	Jun-2014 to Aug-2014	3 months	[REDACTED]
Asbestos/ Hazardous Material Abatement	Aug-2014 to Apr-2015	9 months	[REDACTED]
Demolition/ Mothball	Jun-2014 to May-2016	2 years	[REDACTED]
Remediation/ Recycling/ Disposal	Jan-2016 to May-2016	5 months	[REDACTED]

Total Closure Costs for Balance of Island [REDACTED]

The entire scope of closure activities in Scenario One occurs over a period of 3 years and 1 month, beginning in June 2014 and completed in July 2017. The total cost of these closure activities is [REDACTED]. A Contract Phasing Allowance has been included to adjust the scenario costs in anticipation of DHS’s potential decision to perform the work in multiple, non-consecutive phases. These allowances address additional costs associated with demobilization, remobilization, additional contract management burden and seasonal work delays. The table below displays the costs by closure activity for Scenario One:

Closure Costs by Activity Type			
Closure Activity Type	Activity Type Duration		Cost
Biodecontamination	Jun-2014 to Apr-2015	11 months	[REDACTED]
Asbestos/ Hazardous Material Abatement	Aug-2014 to Mar-2016	1 year, 8 months	[REDACTED]
Demolition/ Mothball	Jun-2014 to Jul-2017	3 years, 1 month	[REDACTED]
Remediation/ Recycling/ Disposal	Jan-2016 to Jun-2017	1 year, 6 months	[REDACTED]
Contract Phasing Allowance	Jun-2014 to Jul-2017	3 years, 1 month	[REDACTED]

Total Closure Costs [REDACTED]

4.1.5 Plum Island O&M

DHS would continue to pay for Plum Island O&M costs until it is transferred to a new owner. It is assumed that O&M of the aging PIADC facility and its associated Plum Island infrastructure and support services would continue to cost the government premium rates. Plum Island O&M costs are currently projected by DHS to rise at an average of 5.6% per year over the next five-year period to meet the increasing demands of inflation, rising fuel costs, technical and IT issues, and security requirements. Plum Island O&M costs are assumed to increase at this rate for as long as DHS owns Plum Island.

After mission operations are transitioned to the mainland NBAF by the end of 2014, Plum Island O&M costs would be significantly decreased. While the closure activities are in progress, only essential services would have to be provided by DHS. Ferry operations, security requirements, and maintenance crews could all be substantially reduced. Utility costs would also decrease since the PIADC facility would not require the significant quantities of power and water needed during operations. DHS estimates that the reduced O&M needs would be approximately 25% of the O&M needs for the PIADC facility while it is operational.

Plum Island O&M Costs [REDACTED]						
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

4.1.6 Transition Activities

Until the NBAF construction is completed and ready for occupancy by the end of 2014, research programs and mission operations would continue at the PIADC facility. Therefore, all mission transition activities would need to be completed by the end of 2014. Mission transition activities are categorized as facility transition activities, which relate to transitioning equipment from the PIADC facility, or employee transition activities, which relate to transitioning DHS employees.

The primary facility transition costs include relocating the existing sample/vaccine bank and a portion of the existing laboratory equipment to the mainland NBAF. The sample/vaccine bank is currently stored in a freezer bank (primarily ultra-low freezers) and is assumed to be relocated to the NBAF. The cost to relocate the sample/vaccine bank is [REDACTED] which includes purchasing nitrogen tanks and racks, labor costs to track, load and unload materials, truck transportation to the mainland site, and appropriate disposal of the old PIADC facility freezers. Although the NBAF is assumed to be equipped with new laboratory equipment, approximately [REDACTED] is assumed to be expended to reutilize a portion of the PIADC facility laboratory equipment at the NBAF. Since the PIADC facility has an NRC license to operate specific microscopes, there is a cost of approximately [REDACTED] to complete the process of terminating this license.

The PIADC facility transition activities begin in September 2014 and are completed in December 2014, a total duration of 4 months. The total cost of the facility transition activities is [REDACTED]

Facility Transition Costs			
Facility Transition Activity	Activity Duration		Cost
NRC License Termination	Sep-2014 to Dec-2014	4 months	[REDACTED]
Sample/Vaccine Bank Relocation	Sep-2014 to Dec-2014	4 months	[REDACTED]
Laboratory Equipment Relocation	Sep-2014 to Dec-2014	4 months	[REDACTED]

Total Facility Transition Costs [REDACTED]

The primary cost for transitioning employees is from providing employee relocation allowances for staff that chooses to transfer to the mainland NBAF location. DHS is not currently offering compensation through the VERA/VSIP programs to employees who might choose to not relocate to a mainland NBAF. This study assumes that any potential cost for compensating a DHS employee who chooses to not relocate would not exceed the employee relocation allowance included in this estimate. The total DHS cost of providing employee relocation allowances is [REDACTED]. Using the same assumptions for USDA employees, the total USDA cost of providing employee relocation allowances is [REDACTED]

DHS would also need to provide appropriate training and education programs to ensure an effective transition for staff working in a new facility. The estimated staff training cost is [REDACTED], which includes training course registration and staff per diem to attend two separate one-week courses.

The employee transition activities begin in April 2014 and are completed in December 2014, a total duration of 9 months. The total cost of the employee transition activities is [REDACTED]

Employee Transition Costs			
Employee Transition Activity	Activity Duration		Cost
DHS Employee Relocation Allowance	Oct-2014 to Dec-2014	3 months	██████████
USDA Employee Relocation Allowance	Oct-2014 to Dec-2014	3 months	██████████
Staff Training	Apr-2014 to Jun-2014	9 months	██████████

Total Employee Transition Costs ██████████

¹ Includes \$18.8M of USDA relocation costs

The entire scope of transition activities in Scenario One occurs over a period of 9 months, beginning in April 2014 and completed in December 2014. The total cost of these closure activities is ██████████.

Total Mission Transition Costs			
Mission Transition Activity	Activity Duration		Cost
Facility Transition	Sep-2014 to Dec-2014	4 months	██████████
Employee Transition	Apr-2014 to Dec-2014	9 months	██████████

Total Mission Transition Costs ██████████

4.1.7 Other Activities

After all closure activities have been completed to remove potential DHS liabilities, the Plum Island property and all remaining assets can be sold to a new owner. All property disposition activities for transferring Plum Island to a new owner will be performed by GSA and be reimbursed by DHS. GSA transaction fees would include costs related to legal requirements, regulatory compliance, and sale of the property. Based on preliminary discussions between DHS and GSA, DHS has provided the study team with the estimated cost of ██████████ for GSA transaction fees that would be incurred to pursue the potential sale of Plum Island. An appraisal of the fair market value of Plum Island is not included in the scope of this study, so any benefits to DHS in terms of sale proceeds are not evaluated.

The estimated cost of ██████████ for new loose scientific equipment was estimated by NDP in the *NBAF Site Cost Analysis*. Since the cost of loose scientific equipment is not included in the construction program cost estimate, it is included as part of the total closure and transition program cost, based on the cost provided in the *NBAF Site Cost Analysis*. The burden of this cost is separate from the DHS NBAF construction budget and will be shared by the USDA and DHS research program budgets. The specific allocation of these shared costs will be determined during the NBAF detailed design and construction period following the NBAF Decision.

The total cost of the other activities is ██████████

Total Other Activity Costs			
Other Activities	Activity Duration		Cost
Property Disposition Cost	Jan-2017 to Sep-2017	9 months	██████████
Scientific Equipment Procurement	Apr-2014 to Dec-2014	9 months	██████████

Total Mission Transition Costs

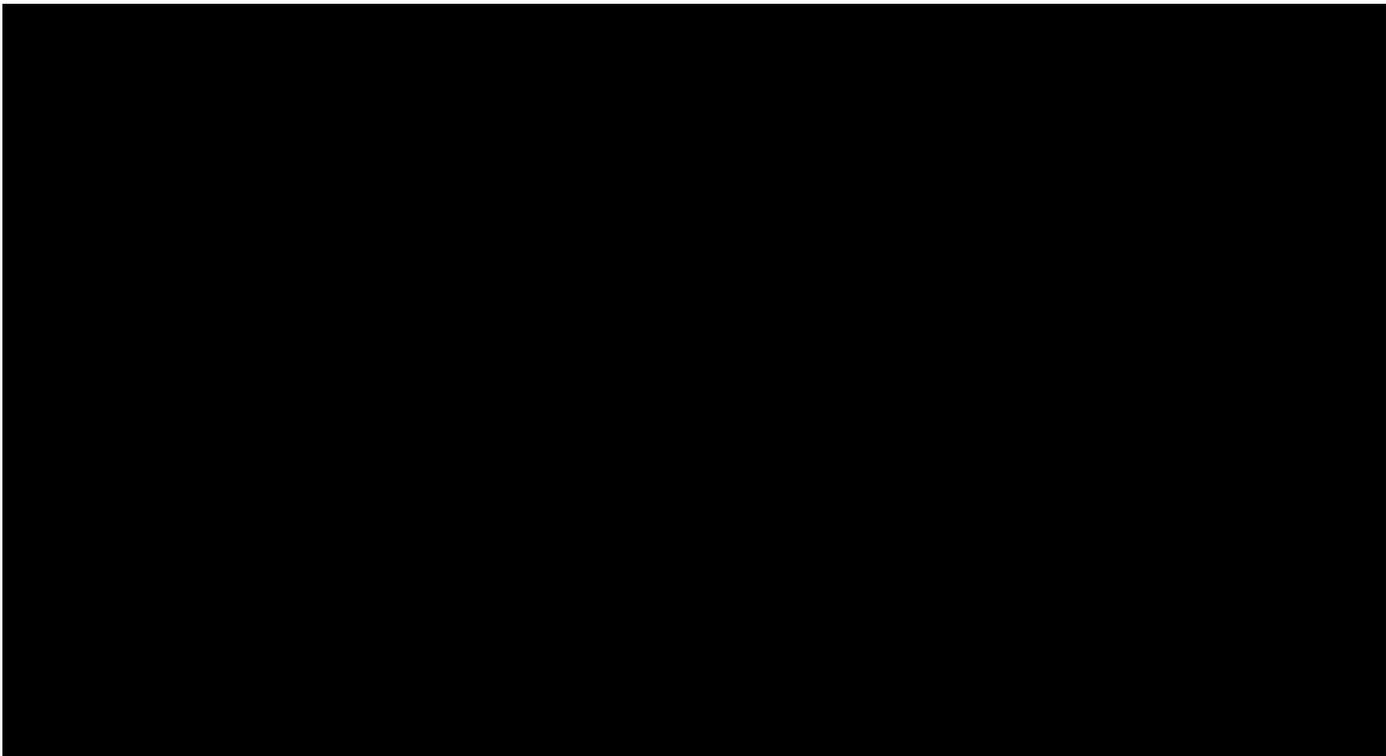
██████████

¹ Cost provided by DHS

² Cost provided by NDP in *NBAF Site Cost Analysis*; cost includes equipment that is not hard piped or wired to the NBAF and that can be purchased and installed after the facility is constructed

4.1.8 Scenario One Summary

The total cost for closure and transition activities in Scenario One is ██████████. All of these activities, including planning, would take approximately 6 years and 1 month to complete, beginning in September 2011 and completing in September 2017. ██████████



4.1.9 Benefits and Impacts of Site Specific NBAF Locations and In-Kind NBAF Consortia Contributions

The five proposed mainland NBAF sites that are currently being evaluated for selection include Athens, GA; Manhattan, KS; Flora, MS; Butner, NC; and San Antonio, TX.

The ultimate decision to construct the NBAF at any of the above locations has no impact to the costs or schedules identified as part of the Plum Island specific activities, including Program Management, Facility and Asset Closure and PIADC Operations & Maintenance activities identified in the Scenario One Evaluation section above. The travel distance to each of the specific potential NBAF sites, as well as in-kind contributions identified by the Consortia, are assumed to have limited impacts on the transition costs and schedules identified below.

Proposed NBAF Site	Distance from the PIADC Facility*
Athens, GA	954 miles
Manhattan, KS	1,425 miles
Flora, MS	1,335 miles
Butner, NC	594 miles
San Antonio, TX	1,939 miles

* Distance as calculated by Google Maps driving directions

[NOTE: In-Kind contributions were assessed during this study as identified in Requests for Additional Information responses and in any subsequent communications prior to the publication of this report as provided from each site’s Consortium. Specifics regarding the nature and value of these in-kind contributions is considered Source Selection Sensitive information and therefore not identified in this report.]

Although significant costs are associated with the transfer of sample and vaccine materials, the majority of these costs are associated with labor to perform risk management activities, safely package, maintain, provide chain of custody information and ensure the viability of these materials. The actual costs associated with shipping to the furthest potential NBAF site is less than \$250,000. Therefore the cost benefit of any site based solely on distance is negligible. Actual benefits would exist in terms of route planning and coordination activities, assuming that advance coordination efforts may be instituted with each state on the transfer route for the highest risk materials.

Similarly, some sites have offered contributions related to facilitating personnel transfer and providing facilities for training purposes. These contributions offset a percentage of the costs incorporated into this study for employee relocations, though many of the incurred expenses fall outside of the expenses covered by these contributions. However, it should be noted that they can provide significant logistical benefits to both staff and their families that may be relocated as well as to the NBAF construction and commissioning process.

This report assumes that training provided for employees will be performed by existing training programs at BSL-4 facilities followed by an additional start-up operational period for developing and implementing procedures that are specific to the NBAF facilities and equipment. Some of the consortia have offered funding to directly support training that would offset approximately 10% of the estimated training costs. In addition, the contributions that offer utilization of nearby facilities would likely offset an additional portion of this training burden based upon the facility’s ability to provide the required course curriculum for the NBAF’s BSL-4 environment. These facilities could alleviate a portion of the startup operational burdens by limiting potential interruptions to commissioning activities by concurrently performing non-site-specific, but necessary activities (laboratory and emergency planning procedure development, development of simulated practice environments, administrative duties, etc). These activities provide value to the government by reducing the risk of delays during the construction, commissioning or

operational start-up periods. However, these benefits to NBAF construction or operational costs are difficult to quantitatively assess and are outside the scope of this report. Therefore, although no significant cost reductions are accounted for in the estimates developed during this study, the in-kind contributions still provide benefit to the government.

4.2 SCENARIO TWO: NBAF IS CONSTRUCTED ON PLUM ISLAND

For scheduling and cost estimating purposes, this study assumed the following timeline if the NBAF is constructed on Plum Island:

1. The NBAF is constructed, commissioned, and completely operational in 2014. All operations at the PIADC facility would transition to the NBAF facility by the end of 2014.
2. All research operations at the PIADC facility are ceased by January 1, 2015. Closure activities for *all* Plum Island facilities – including abandoned or non-essential buildings for research operations – would begin on this date. It assumed that Plum Island’s limited harbor, road, and utility infrastructure resources would not be able to support the NBAF construction activities, including materials transfer, staging, temporary utility requirements and construction staff, at the same time as the construction/demolition activities and any closure activities concurrently. All closure activities must therefore occur after the NBAF is completely operational and the PIADC facility has terminated operations.

4.2.1 Program Management and Oversight

The total Owner’s Costs for Scenario One of [REDACTED] covers all planning costs for managing the closure and transition activities for the period from September 2011 through April 2018. In addition, contract and project management costs of [REDACTED] are required for the oversight and execution of all work.

To ensure that the closure and transition activities can occur within the estimated schedule, [REDACTED] will be required for study and planning purposes beginning in September 2011. This cost includes an asbestos survey in 2013, at a cost of [REDACTED], to verify the actual scope of asbestos abatement that is required.

The total Project Management cost for these services is [REDACTED]

Project Management Costs			
Management Activity	Duration		Cost
Owner’s Costs	Sep-2011 to Apr-2018	6 years, 8 months	[REDACTED]
Study/ Planning Costs	Sep-2011 to Dec-2013	2 years, 4 months	[REDACTED]
Contract Management	Jun-2013 to Apr-2018	4 years, 11 months	[REDACTED]
Total Project Management Costs			[REDACTED]

4.2.2 Facility and Asset Closure Activities

Closure activities for the functioning laboratory and its supporting facilities begin in January 2015, after operations have transitioned to the NBAF on Plum Island, and are completed in January 2018. The total duration of closure activities for the laboratory area is 3 years and 1 month. Since research activities were conducted in the laboratory facility, there are significant biodecontamination and hazardous material removal costs incurred in addition to asbestos abatement, demolition, and disposal costs. The [REDACTED] cost of closing the laboratory area facilities constitutes nearly half of the total Scenario Two closure costs.

Laboratory Area – Closure Costs			
Closure Activity	Activity Duration		Cost
Biodecontamination	Jan-2015 to Apr-2015	4 months	[REDACTED]
Asbestos/ Hazardous Material Abatement	May-2015 to Sep-2016	1 year, 5 months	[REDACTED]
Demolition/ Mothball	Jan-2015 to Jan-2018	3 years, 1 months	[REDACTED]
Remediation/ Recycling/ Disposal	Oct 2017 to Jan-2018	4 months	[REDACTED]

Total Closure Costs for Laboratory Area [REDACTED]

Closure activities for the harbor area facilities begin in April 2015 and are completed in November 2016, a total duration of 1 year and 8 months. The total cost of closure activities for the harbor area is [REDACTED] and includes asbestos abatement, demolition of structurally unsound buildings, and mothballing remaining buildings. Although the harbor area will continue to be fully operational, these activities are required to limit environmental and safety liabilities associated with underutilized and abandoned assets located within the harbor area.

Harbor Area – Closure Costs			
Closure Activity	Activity Duration		Cost
Biodecontamination	n/a	n/a	[REDACTED]
Asbestos/ Hazardous Material Abatement	May-2015 to Jul-2015	3 months	[REDACTED]
Demolition/ Mothball	Apr-2015 to Nov-2016	1 year, 8 months	[REDACTED]
Remediation/ Recycling/ Disposal	Oct-2016 to Oct-2016	1 month	[REDACTED]

Total Closure Costs for Harbor Area [REDACTED]

Closure activities for the utility infrastructure begin in January 2015 and are completed in November 2017, a total duration of 2 years and 11 months. The total cost of closure activities for the utility

infrastructure is [REDACTED] and includes biodecontamination of the sewage decontamination facility, asbestos abatement, demolition of the sewage decontamination facility and old power plant (including removal of petroleum-contaminated soil near these buildings), and mothballing remaining buildings.

Utilities – Closure Costs			
Closure Activity	Activity Duration		Cost
Biodecontamination	Mar-2015 to May-2015	3 months	[REDACTED]
Asbestos/ Hazardous Material Abatement	May-2015 to Nov-2015	7 months	[REDACTED]
Demolition/ Mothball	Jan-2015 to Nov-2017	2 years, 11 months	[REDACTED]
Remediation/ Recycling/ Disposal	Aug-2016 to Jan-2017	6 months	[REDACTED]

Total Closure Costs for Utilities [REDACTED]

4.2.3 NRHP and Security

NRHP and security costs are incorporated into Plum Island O&M costs and are assumed that they will be maintained beyond the operational period of the PIADC Facility by a new owner. Therefore, no additional closure or transition costs or schedule items are associated with these assets.

4.2.4 Balance of Island

Closure activities for the ‘balance of island’ facilities begin in January 2015 and are completed in November 2016, a total duration of 1 year and 11 months. The total cost of closure activities for the ‘balance of island’ facilities is [REDACTED] and includes biodecontamination of the old laboratory facility, asbestos abatement, demolition of the old laboratory facility and structurally unsound buildings, and mothballing of the remaining buildings.

Balance of Island –Closure Costs			
Closure Activity	Activity Duration		Cost
Biodecontamination	Jan-2015 to Feb-2015	2 months	[REDACTED]
Asbestos/ Hazardous Material Abatement	Mar-2015 to Oct-2015	8 months	[REDACTED]
Demolition/ Mothball	Jan-2015 to Nov-2016	1 year, 11 months	[REDACTED]
Remediation/ Recycling/ Disposal	Aug-2016 to Nov-2016	4 months	[REDACTED]

Total Closure Costs for Balance of Island [REDACTED]

The entire scope of closure activities in Scenario Two occurs over a period of 3 years and 1 month, beginning in January 2015 and completed in January 2018. The total cost of these closure activities is [REDACTED], including a contract phasing allowance similar to Scenario One. The table below displays the costs by closure activity for Scenario Two:

Closure Costs by Activity			
Closure Activity	Activity Duration		Cost
Biodecontamination	Jan-2015 to May-2015	5 months	[REDACTED]
Asbestos/ Hazardous Material Abatement	Mar-2015 to Sep-2016	1 years, 7 months	[REDACTED]
Demolition/ Mothball	Jan-2015 to Jan-2018	3 years, 1 month	[REDACTED]
Remediation/ Recycling/ Disposal	Aug-2016 to Jan-2018	1 year, 6 months	[REDACTED]
Contract Phasing Allowance	Jan-2015 to Jan-2018	3 years, 1 month	[REDACTED]

Total Closure Costs [REDACTED]

4.2.5 Plum Island O&M

For as long as operations continue at Plum Island, DHS would be responsible for all Plum Island O&M costs until the NBAF is constructed on Plum Island in 2014. Plum Island O&M costs are assumed to increase at the rate of 5.6% for this time period. Once the NBAF is constructed, O&M costs for all Plum Island operations are assumed to be assimilated into the NBAF program budget.

Plum Island O&M Costs [REDACTED]							
2011	2012	2013	2014	2015*	2016*	2017*	2018*
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	--	--	--	--

*Plum Island O&M costs considered a part of the NBAF O&M program budget

4.2.6 Transition Activities

Until the NBAF construction is completed and ready for occupancy by the end of 2014, research programs and mission operations would continue at the PIADC facility. Therefore, all mission transition activities would need to be completed by the end of 2014. Mission transition activities have been categorized as facility transition activities, which relate to transitioning equipment from the PIADC facility, or employee transition activities, which relate to transitioning DHS employees.

The primary facility transition costs include relocating the existing sample/vaccine bank and a portion of the existing laboratory equipment to the mainland NBAF. Since the NBAF would be built near the PIADC facility, an enclosed temporary containment structure could be constructed to facilitate the transfer of sample/vaccine bank materials and laboratory equipment from the PIADC facility to the NBAF. The cost to relocate the sample/vaccine bank is [REDACTED], which includes constructing the

temporary connection, labor costs for loading and unloading, and appropriate disposal of the old PIADC facility freezers. Although the NBAF is assumed to be equipped with new laboratory equipment, approximately [REDACTED] is assumed to be expended to reutilize a portion of the PIADC facility laboratory equipment at the NBAF. Since the PIADC facility has an NRC license to operate specific microscopes, there is a cost of approximately [REDACTED] complete the process of terminating this license.

The PIADC facility transition activities begin in September 2014 and are completed in December 2014, a total duration of 4 months. The total cost of the facility transition activities is [REDACTED]

Facility Transition Costs			
Facility Transition Activity	Activity Duration		Cost
NRC License Termination	Sep-2014 to Dec-2014	4 months	[REDACTED]
Sample/Vaccine Bank Relocation	Sep-2014 to Dec-2014	4 months	[REDACTED]
Laboratory Equipment Relocation	Sep-2014 to Dec-2014	4 months	[REDACTED]

Total Facility Transition Costs [REDACTED]

There are no costs to relocate employees since NBAF would be constructed on Plum Island. However, DHS would still need to provide appropriate training and education programs to ensure an effective transition for staff working in a new facility. The estimated staff training cost is [REDACTED] which includes training course registration and staff per diem to attend two separate one-week courses.

The employee transition activities begin in April 2014 and are completed in December 2014, a total duration of 9 months. The total cost of the employee transition activities is [REDACTED]

Employee Transition Costs			
Employee Transition Activity	Activity Duration		Cost
Employee Relocation Allowance	n/a	n/a	[REDACTED]
Staff Training	Apr-2014 to Dec-2014	9 months	[REDACTED]

Total Employee Transition Costs [REDACTED]

The entire scope of transition activities in Scenario Two occurs over a period of 9 months, beginning in April 2014 and completed in December 2014. The cost of these closure activities is [REDACTED]

Total Mission Transition Costs			
Mission Transition Activity	Activity Duration		Cost
Facility Transition	Sep-2014 to Dec-2014	4 months	██████████
Employee Transition	Apr-2014 to Dec-2014	9 months	██████████

Total Mission Transition Costs ██████████

4.2.7 Other Activities

Scenario Two would ensure that Plum Island remains a DHS asset for the foreseeable future and therefore does not provide for the sale or transfer of Plum Island. Unlike Scenario One, there is no potential financial gain to DHS by selling Plum Island.

The estimated cost of ██████████ for new loose scientific equipment was provided by NDP in the *NBAF Site Cost Analysis*. Since the cost of loose scientific equipment is not included in the construction program cost estimate, it is included as part of the total closure and transition program cost, based on the cost provided in the *NBAF Site Cost Analysis*. The burden of this cost is separate from the DHS NBAF construction budget and will be shared by the USDA and DHS research program budgets. The specific allocation of these shared costs will be determined during the NBAF detailed design and construction period following the NBAF Decision.

The total cost of the other activities is ██████████

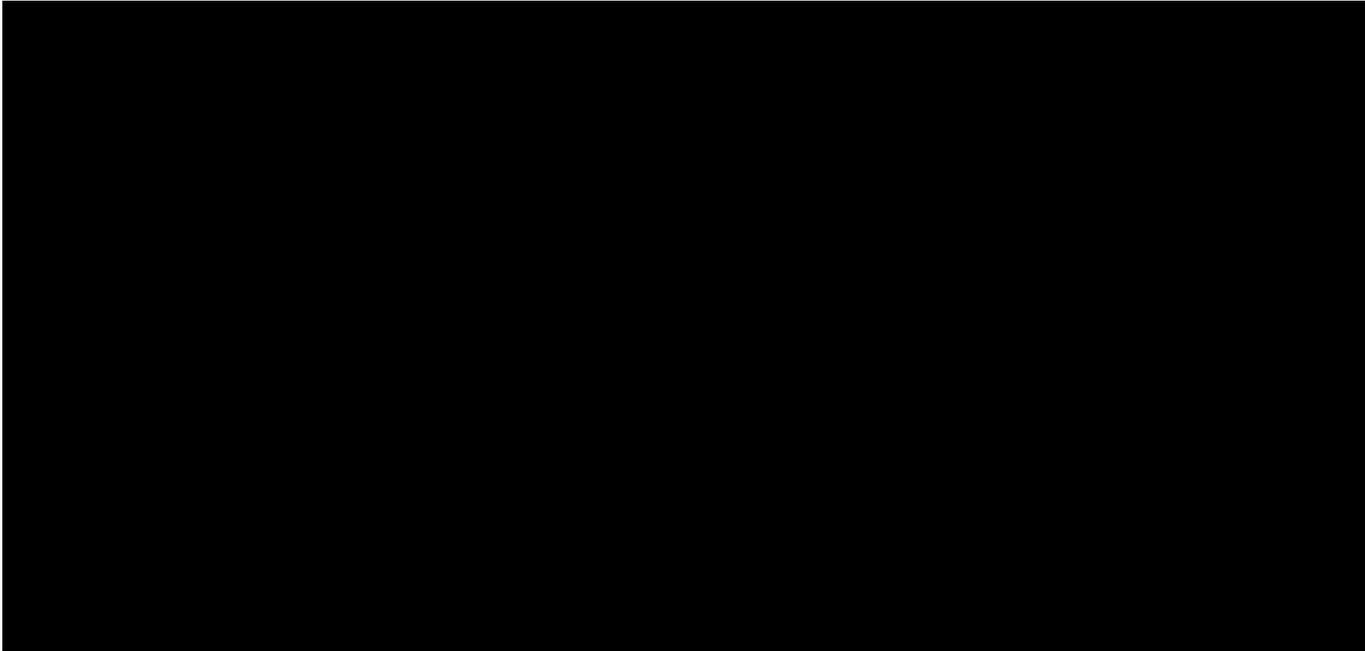
Total Other Activity Costs			
Other Activities	Activity Duration		Cost
Property Disposition Cost	n/a	n/a	██
Scientific Equipment Procurement	Apr-2014 to Dec-2014	9 months	██████████ ¹

Total Mission Transition Costs ██████████

¹ Cost provided by NDP in *NBAF Site Cost Analysis*; cost includes equipment that is not hard piped or wired to the NBAF and that can be purchased and installed after the facility is constructed

4.2.8 Scenario Two Summary

The total cost for closure and transition activities in Scenario Two is [REDACTED]. All of these activities, including planning, would take approximately 6 years and 8 months to complete, beginning in September 2011 and completing in April 2018. [REDACTED]



4.3 SCENARIO THREE: NBAF IS NOT CONSTRUCTED, OR “NO ACTION ALTERNATIVE”

If the “No Action Alternative” is the selected course of action, then it is assumed that DHS would continue to operate the PIADC facility for some undetermined period of time. This study does not claim that the PIADC facility would be unable to continue operating past 2019, nor does it assert that the recommended course of action at the end of 2019 would be to cease operations at the PIADC facility and transition to an alternate facility. This study only recommends that, based on a 2006 study, the PIADC facility is operable at its current utilization until a time between 2016-2019. In order to continue the existing research programs beyond the 2016-2019 operational period, it is anticipated that one of the following options would likely be pursued by DHS:

1. Evaluate PIADC Facility (minimal research program change): A technical evaluation of the PIADC BSL-3 infrastructure and revised program requirements for the PIADC facility would be performed in the absence of the NBAF construction, similar to the 2006 study. It is assumed that such a study would identify a new program of BSL-3 infrastructure improvements and major construction activities;
2. Redefine Program Requirements and Facility Location (substantial research program change): An alternate high containment laboratory construction program would be pursued to meet redefined mission needs in lieu of the BSL-3Ag/BSL-4 NBAF and to replace the PIADC facility as it enters its seventh decade of service; or,
3. Discontinue PIADC Facility Operations: Research activities at the PIADC facility are ceased and PIADC facility operations are terminated. The significance and duration of the impacts to the DHS and USDA research missions by the closing of the aging PIADC facility is beyond the scope of this study.

The referenced 2006 study, the *PIADC Research Needs and Project Prioritization Study*, developed an integrated program of construction/renovation projects to address infrastructure corrective actions for the current Plum Island facility. These infrastructure corrective actions were scoped as necessary to meet DHS and USDA’s ARS and APHIS current research needs and program requirements for a utilization period extending ten years. Based upon the analysis of the 2006 study and upon the planned 2009 completion of the construction activities, these upgrades are intended to provide a facility and infrastructure such that from a technical perspective, PIADC will be able to safely meet its operational requirements until approximately 2016-2019. In addition to infrastructure corrective actions, this program provides only minor additional animal holding capacity, renovations to the necropsy facilities, and limited mechanical renovations to existing BSL-3 facilities that support the laboratories. These projects do not provide sufficient additional capacity to support proposed future new research programs in foreign animal and zoonotic diseases.

In addition, the ability to safely operate the PIADC facility assumes that the facility is able to be operated at the current standards and that there are no changes in the applicable regulations or operating procedures that would require significant changes or additional burdens to the existing animal holding and laboratory practices or to the operational requirements of its utility infrastructure.

With each of the above options, it is anticipated that DHS would need to implement decontamination and closure activities of the PIADC laboratory facility and portions of the infrastructure at some point in the future. Actual costs to complete these activities will be dependant upon the timing of the decision, the extent of closure activities determined to be necessary, and the effects of inflation and construction market demands.

5 SCENARIO COMPARISON

This chapter provides a comparison of the scenarios related to cost, integrated program schedule, and implementation considerations. Costs are compared for both closure and transition activities and Plum Island O&M.

5.1 COST COMPARISON

5.1.1 Closure and Transition Costs

The total costs for each scenario were categorized into project management, closure activity and transition activity costs. [REDACTED]

Project management and closure activity costs are approximately the same for Scenario One and Two. The principal difference between these scenarios is that Scenario Two has substantially lower transition activity costs. Constructing the NBAF on Plum Island rather than a mainland site does not require the Federal Government to pay relocation allowances to employees, which reduces the government costs by approximately [REDACTED]. Scenario Two also has a lower cost to relocate the sample/vaccine bank from the PIADC facility to the NBAF since these materials do not have to be transported off of Plum Island to a mainland site and a temporary containment structure would be constructed to connect the two facilities. The cost of relocating the samples and the vaccine bank in Scenario Two is [REDACTED] versus [REDACTED] in Scenario One. Since it is assumed that Plum Island would not be transferred to a new owner for the foreseeable future in Scenarios Two, there is no property disposition cost of [REDACTED] as is required in Scenario One.

The total closure and transition cost difference between Scenario One and Scenario Two reflects the lower transition costs and lack of property disposition costs in Scenario Two. Scenario One has a total closure and transition program cost of [REDACTED] versus [REDACTED] for Scenario Two.

5.1.2 Plum Island O&M Costs

[Redacted]

[Redacted]

Plum Island O&M costs remain the same for all scenarios through the year 2014. After the year 2014:

- In Scenario One: Only essential services would have to be provided by DHS for Plum Island during closure activities, which is significantly less than the current O&M burden. Beyond 2017, only O&M funding to support historic facility O&M infrastructure is anticipated.
- In Scenario Two: At this point, Plum Island O&M costs would become part of the NBAF O&M costs which have been estimated in another study.
- In Scenario Three: Plum Island O&M costs would continue to increase, since closure and transition activities are delayed for an unknown period of time.

5.2 INTEGRATED PROGRAM SCHEDULES

The integrated program schedules are comprised of all closure and transition components required to implement each program including:

- DHS Owner Planning, Program Management and Oversight
- Transition Activities
- Closure Activities

Figure 5.3 displays shows each of the integrated program schedule components for the three scenarios:

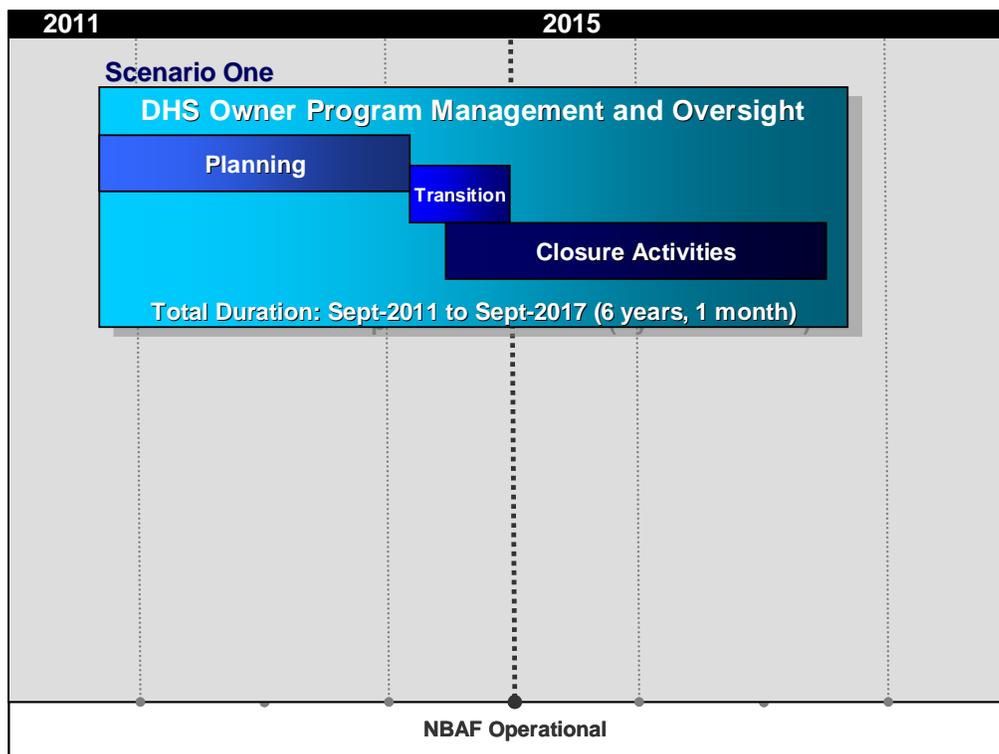


Figure 5.3: Integrated Program Schedules by Scenario

Scenarios One and Two both contain owner activities that begin in September 2011 and have the same schedules for planning and transition activity schedules. However, the integrated program schedule for Scenario Two is approximately seven months longer than Scenario One due to the sequencing of transition and closure activities to coordinate with NBAF construction requirements.

Scenario One allows transition and closure activities to be executed concurrently since closure activities for nonessential Plum Island assets begins in June 2014, prior to the PIADC facility ceasing operations. Closure activities for Scenario Two cannot begin until January 2015, after NBAF construction activities would be completed on Plum Island. Since transition and closure activities cannot be executed concurrently in Scenario Two, its integrated program schedule is extended into April 2018 versus September 2017 in Scenario One.

For Scenario Three, it is anticipated that DHS would need to implement decontamination and closure activities of the current PIADC laboratory facility and portions of the infrastructure at some point in the future.

5.3 SCENARIO COMPARISON OVERVIEW AND SUMMARY

The following tables provide a final comparison of each scenario’s the major components along of each scenario with and a discussion of the drawbacks, risks and benefits.

Cost	Scenario One	Scenario Two
Total Program Cost	██████████	██████████
Management Costs	██████████	██████████
Closure Costs	██████████	██████████
Transition Costs	██████████	██████████
Other Activity Costs ²	██████████	██████████
Plum Island Operations & Maintenance	Limited Plum Island O&M costs incurred for ferry and utility operations through completion of closure activities in 2017, overlapping with NBAF O&M costs for 3 years. There are only nominal costs only beyond 2017 until property ownership is transferred.	Limited Plum Island O&M costs incurred for ferry and utility operations assimilated into NBAF O&M costs in 2015 and continue as part of NBAF operations for as long as DHS is responsible for Plum Island. No transfer of property ownership would occur.

¹ Includes \$18.8M of USDA employee relocation costs

² Estimated costs provided by DHS or NDP

Duration	Scenario One	Scenario Two
Total Duration	6 years, 1 month	6 years, 8 months
Start Planning	September 2011	September 2011
Start Closure Activities	June 2014	January 2015
Completion	September 2017	April 2018
Duration Comparison	This scenario provides the shortest duration to complete all closure activities.	This scenario provides an extended duration to complete all closure activities.

General	Scenario One	Scenario Two
<p>Return on O&M Investment to Support Research Requirements</p>	<p>NBAF O&M costs (included in the <i>NBAF Site Cost Analysis</i>) would accommodate the proposed BSL-3Ag/BSL-4 research requirements. After 2017, this scenario would result in the lowest yearly O&M burden for the research performed.</p>	<p>NBAF O&M costs, inclusive of Plum Island premium expenses, would accommodate proposed BSL-3Ag/BSL-4 research requirements.</p>
<p>Potential for Property Transfer</p>	<p>This scenario provides the option for DHS to transfer the Plum Island property portfolio in 2017 or later with no continued responsibilities or liabilities.</p>	<p>This scenario does not provide any future option for DHS to transfer the Plum Island property portfolio during NBAF’s operational life.</p>
<p>Program Burden</p>	<p>This scenario includes no burdens to the research program other than the operation of a 520,000 SF research facility.</p> <p>The actual construction and operational costs of the NBAF associated with this option are available in the <i>NBAF Site Cost Analysis</i>.</p>	<p>This scenario includes the burdens associated with ownership of an 840-acre island for the operation of a 520,000 SF research facility. In addition to the increased O&M costs identified above, this burden includes the impact to research programs during weather events, increased logistics, staffing and regulatory compliance burdens associated with historic and environmentally sensitive components of the island, the staffing and regulatory burden of operating a ferry, and all utilities other than electric that would be offset by local municipalities in Scenario One.</p> <p>The actual construction and operational costs of the NBAF associated with this option are available in the <i>NBAF Site Cost Analysis</i>.</p>
<p>Other Risks and Benefits</p>	<p>The success of Scenario One is dependent upon the transition of materials and personnel to a mainland NBAF site. There might be an initial loss of intellectual capital if key staff members do not relocate. The transition of samples and vaccine materials from Plum Island to a mainland site requires logistical planning to avoid loss of biological materials integral to research.</p> <p>Local municipalities and in-kind contributions help reduce infrastructure costs.</p>	<p>Benefits associated with this option include retaining the intellectual capital of the existing staff and decreased logistics for the transition of samples and vaccine materials to the NBAF.</p> <p>Additional benefits include limited reuse of some of the existing infrastructure at Plum Island.</p> <p>Other risks associated with this scenario are discussed in other documents by NDP and DHS.</p>