

August 25, 2008

U.S. Dept. of Homeland Security
Science and Technology Directorate
James V. Johnson
Mail Stop 2100
245 Murray Lane SW
Building 410
Washington, D.C. 20528

Re: DEIS for National Bio- and Agro- Defense Facility

Dear Mr. Johnson,

The Granville Non-Violent Action Team submits the following comments on the Draft Environmental Impact Statement (“DEIS”). Left margin references are to pages within the DEIS.

In light of the significant amount of information which is flat-out absent from the DEIS, such that no comment can be made except to point out the absence of information, inclusion of this information in the FEIS is insufficient to comply with NEPA unless a further public comment period is provided for input on information first appearing in the FEIS.

The DEIS is initially deficient in failing to include any discussion whatsoever of the costs which each host site is expected to bear. The NBAF Feasibility Study states that the host state/locality are expected to pay for the concrete pad for the NBAF, for all utilities to be extended to a point 5 feet away from the facility walls, and for the Central Utilities Plant, among other items. See NBAF Feasibility Study at pdf pages 14 and 15, available at http://www.thememoryhole.org/dhs/nbaf/dhs_nbaf-feasibility-study.pdf (“the following items are not included in the [\$451, now updated to 523, million] project budget noted above, and will require in-kind project contributions: mobile non-fixed program specific scientific equipment, CUP [central utilities plant], and all site utilities beyond five feet of the buildings”). We note that Homeland Security has expressed a preference for the host area to provide these items. See pages 10-11 of May 22, 2008 prepared testimony of Jay Cohen, Homeland Security Undersecretary for Science and Technology before the House Committee on Energy and Commerce, Subcommittee on Oversight and Investigations, available at http://energycommerce.house.gov/cmte_mtgs/110-oi-hrg.052208.Cohen-Testimony.pdf. Accordingly, the DEIS must include a list of the items sought to be charged against the host site, together with cost estimates for these items. We note that Homeland Security is in possession of this data, which is set forth on a site-specific basis, although entirely redacted, in the NBAF Site Cost Analysis, available at http://www.dhs.gov/xlibrary/assets/nbaf_site_cost_analysis.pdf (*PDF, 118 pages - 33 MB*). The DEIS must include a comprehensive – unredacted -- list of such items, with site-specific cost estimates, so that all decision-makers (not only Homeland Security) may have this information before them.

It appears that this cost is the difference between the total project cost of \$705,363,565 (see NBAF Site Cost Analysis at Section 4, page 3) and the lower construction cost figure of \$523,711,811 (see NBAF Site Cost Analysis at Section 5, page 1) that Homeland Security is using for its budgeting purposes. That difference equals **\$181,651,754**. This number is borne out by the costs entailed in building the Galveston National Laboratory, cited elsewhere in the DEIS for comparison (see page 3-60). That laboratory, which is approximately 1/3 the size of the NBAF, had a “total construction cost” of \$167 million, with federal government spending of \$110 million and a “local share” of \$58.6 million. See <http://www.utmb.edu/GNL/about/index.shtml>.

The figures listed above do not include the cost of training first responders (which is not included in DHS’s security budget) and the cost of necessary improvements to transportation infrastructure between I-85 and the NBAF site.

Further, the DEIS must detail what if any local, state and property taxes the NBAF will pay.

We also note the complete absence of any discussion about impact of quarantine or evacuation on the 7,000 institutionalized individuals in Butner – where can 5,000 inmates be moved? How can guards go to and from work? How can nurses, technicians, cafeteria workers go to and from work at the Murdoch Center and Umstead Hospital and the new Central Regional Mental Health Facility? How can Homeland Security ensure that even the rumor of a significant incident at the NBAF does not lead to complete flight of the staff, leaving very vulnerable individuals with no care at all? Although the DEIS references plans, in the event of a foot and mouth disease release, to “completely close all or part of either the infected zone or the surveillance/movement control zone,” and notes that this “would have significant impacts on facilities, employees and residents in the enclose area” (see page 3-216), there is no discussion of how this would impact these vulnerable populations.

We also note the complete absence of any discussion about facility security: to what extent are local first responders expected to meet these needs? Will security be handled by a private contractor? How will fire be handled? How will scientists be screened to avoid another Bruce Ivins/Ft. Detrick/Anthrax incident? Given the March 2008 Government Accountability Office (“GAO”) report detailing extremely substandard performance by the Federal Protective Service in its mission of providing security for federal facilities such as this, and the history of security deficiencies at Plum Island as detailed in the GAO’s September 2003 report, the DEIS cannot ignore this issue.

The DEIS also is grossly deficient in failing to include any actual design plans – and more particularly, site-specific non-conceptual design plans. The conceptual plans given provide no detail whatsoever which would enable the reviewer to ascertain the alleged robustness of the containment systems, or the full range of environmental impacts that the actual structure to be built may implicate. With no renderings to detail the many complex systems upon which the all-important issue of containment is dependent, the risk analysis is meaningless. In the absence of actual plans, the NEPA process has been reduced to a purely hypothetical exercise and can provide no real-world guidance. Further, the absence of design specifics means that the public

cannot know how extensive the promised safety systems are, and cannot monitor whether those systems are cut or diminished due to budgetary constraints or overruns.

Further, there is no discussion about the citizen oversight process which is essential to ensure the vigorous maintenance of the facility and the vigilant application of biosafety procedures without which containment will inevitably fail. Nor is there any reference to independent international inspections to ensure compliance with the Biological and Toxin Weapons Convention.

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The format makes it needlessly difficult to find subsections. Sections at the first decimal point (e.g., 3.9) should be in bold. Sections at the second decimal point (e.g., 3.9.1) should be underlined or otherwise distinguished in font style.

Executive Summary

ES-1 The DEIS notes that “more than 40 contagious foreign animal diseases are currently recognized as threats to the U.S. agricultural economy.” How many of these are currently housed at Plum Island? How many will be housed at the NBAF? We must presume that all of them, if they are indeed threats to the U.S., are to be housed there.

Particularly in light of North Carolina’s very significant poultry population, the DEIS should also address two other diseases specifically identified for study at the NBAF in the 350-page *NBAF Conceptual Design and Feasibility Study* commissioned by DHS, dated August 24, 2007 (and referenced at DEIS p. 2-1). Those diseases are Newcastle Disease and avian flu.

ES-3 It should be mentioned that the “small scale vaccine and reagent production” laboratory is expected to house 30-50 liters of pathogens.

Although reference is made to a contractor-operated facility under government oversight, the DEIS is devoid of any analysis of the potential impacts such an arrangement may pose on facility maintenance, security and biocontainment, when decisions that may be fiscally appropriate for the private contractor conflict with the core concerns of ensuring that the highest level of vigilance is maintained to ensure community safety.

Reference is also made to “standard decontamination procedures” if and when the NBAF is decommissioned. But for a lab such as this, which would be larger than any other high-containment lab worldwide and which would be unique in the United States in its large animal research (with attendant unique issues in the disposal of infected waste and carcasses), there can be no “standard decontamination procedures.”

ES-4 No aspect of the 4 listed evaluation criteria (proximity to research capabilities and workforce; acquisition/construction/operations; and community acceptance) has any bearing on the stated intent “to ensure that the NBAF would be located in an environmentally suitable site.”

ES-7 The statements regarding the water and sewer capacity for the Butner site are not accurate, as detailed infra. The Butner site is the only site that would need all-new infrastructure. The EIS must detail here who pays for such infrastructure, and what that cost is anticipated to be, as set forth (but redacted) in the NBAF Site Cost Analysis.

ES-8 The referenced “alternative modeling” for air quality must be done during the EIS process, with opportunity for public comment, not outside the EIS process. Further, the Butner site is prime farmland; that statement requires correction. Likewise, it must be noted that the Butner site is currently in nonattainment under EPA air quality regulations.

The statement that “all discharged wastewater would meet local discharge requirements” is specious. There are no local or state, or even federal, regulations to govern pathogens of the sort to be studied at the NBAF. Further, the ES fails to note that the waters into which the NBAF would ultimately discharge are impaired, and SGWASA’s permit is undergoing significant scrutiny.

The statement that an accidental release of pathogens would affect all sites similarly is not accurate; the Plum Island site would suffer vastly lower impacts in this regard. The statement that the research at the NBAF has the potential to prevent or contain outbreaks of studied diseases has no basis whatsoever in the body of the DEIS; there is no analysis of diseases eliminated or for which widely effective vaccines have been found through the work during Plum Island’s 50+ year history, nor is there any analysis whatsoever of the prognosis for the promised benefit. This statement requires deletion as entirely unsupported.

The statement that NBAF operation would result in 250 to 350 jobs is disingenuous; the number of jobs expected to be filled by state residents (for the N.C. site, that number is 63) must be stated here, not buried in the text.

ES-9 There is no discussion of who will bear the cost to train law enforcement and fire protection personnel (or what that cost will be), and how those personnel will be kept abreast of operational evolution at the NBAF.

The assertion that “the risk of [pathogen] release remains very small” has no basis in the DEIS text, as the risk analysis is based entirely – and explicitly – on assumptions that have no grounding in any actual site-specific or system-specific designs, designs which may vary greatly in the level of containment afforded and impacts threatened. This statement requires deletion.

The statement that there would be “no long-term, disproportionately high and adverse human health, or environmental effects . . . to low income or minority populations” has no basis in the text. As referenced above, the Butner area is home to more than 7,000 institutionalized individuals, and the general population of the area is disproportionately minority, elderly and low-income. There is no analysis whatsoever of the potential impacts on these populations in the event of a disease release.

The statement that “transportation of research materials would not significantly increase the risk of a traffic-related incident” misses the mark. The issue here is not traffic accidents, but pathogen releases.

The statement that NBAF wastewater “would meet all local wastewater permit requirements” ignores the larger question of the impact in the event that a batch of waste is inadequately sterilized, resulting in the discharge of pathogens ultimately into drinking water supplies. Such pathogens are not regulated by existing laws, and conventional waste treatment facilities lack the resources to test for, much less to treat, such waste.

As detailed infra, the statement that the potential for an accidental or intentional release of pathogens from the NBAF is “none to low” is baseless, given the complete absence of any site-specific designs or final decisions regarding critical aspects of the containment infrastructure and the resulting wholly speculative nature of the risk analysis.

ES-10 The statement that “the overall risk rank was moderate” cannot be sustained, given the DEIS’s acknowledgement that all mainland sites would be readily hospitable to pathogen vectors, such that a disease once released could readily become established in the environment. Discounting this high consequence with a shallow and speculative risk analysis is not factually supported or credible.

ES-11 See comments for page 3-511, Table 3.18.2 (which is identical to this Table ES-3).

ES-12 See comments regarding Appendix E. Given that “the risk of accidental release was independent of where the facility was located,” there must be greater focus on the site-specific consequences of such a release. Yet the EIS wholly fails in its obligation to provide any substantive analysis on this point. The sections which purport to analyze this issue are devoid of actual analysis.

The referenced Appendix D should include a recitation of the results of the federally-sponsored Crimson Sky simulation of a foot and mouth disease release on the mainland, and should address the concerns identified in the Government Accountability Office’s May 2008 report regarding the risks posed by conducting foot and mouth disease research on the mainland U.S.

ES-13 Although reference is made to the extensive community concerns regarding institutionalized populations, the issue of the impacts on those populations, particularly in the event of a pathogen release that prompted the imposition of movement restriction zones, is ignored in the DEIS.

1.0 Purpose and Need for Proposed Action

2.0 Description of the Proposed Action and Action Alternatives

2.1 No Action Alternative

- 2-1 The current facility at PIADC already handles BSL-3 and BSL-3Ag research. Only those diseases requiring BSL-4 containment must be done at another facility. Moreover, the U.S. has constructed 10 new BSL-4 facilities since 2001, leading to a vastly expanded domestic capacity for BSL-4 research. The statement that the expanded mission requirements could not be met in the absence of the NBAF is wholly conclusory (as is the statement at 2-27), and fails to give substantive reasons why this work could not be conducted within existing U.S. Government BSL-4 laboratory capacity.

2.2.1 Construction Requirements

- 2-1 How much area will parking and any other facilities cover? Will poultry or birds of any species be housed at the NBAF?
- 2-2 The DEIS fails to identify all the diseases currently housed at the PIADC facility which NBAF is slated to replace. It is thus impossible to determine if the 3 diseases selected for detailed analysis are sufficiently representative of the characteristics of the other diseases which will be housed at NBAF, upon PIADC's decommissioning or transfer of part or all of those diseases to NBAF, for purposes of creating an accurate analysis of the potential worst-case health, environment and economic consequence scenarios.

The DEIS should also address two other diseases specifically identified in the *NBAF Feasibility Study*, Newcastle Disease and avian flu. Avian flu has specific relevance for North Carolina, given its large commercial poultry operations and pig farms. (The latter being relevant because of the flu virus's demonstrated tendency to reassort while infecting pigs, enabling the virus to mutate in manners that permit it to become infectious to other mammals, including humans. See Greger, [Bird Flu: A Virus of Our Own Hatching](http://birdflubook.com/a.php?id=58) (Nov. 2006); which may be viewed at <http://birdflubook.com/a.php?id=58> The consequences of a potential release of the highly contagious Newcastle disease (which has mortality rates up to 90%) must also be analyzed in the EIS, particularly given the potential devastation of North Carolina's significant poultry population.

- 2.2 Although there is reference to the use of a gamma irradiator to inactivate samples for shipment, the DEIS fails to discuss the method for disposal of radioactive waste produced by the facility.

Insects studied at the lab must all be sterile to avoid potential reproduction in the event of a release of study insects from the NBAF.

The DEIS fails to analyze the potential for a disease release as a result of the training of outside veterinarians, in the event that they fail to comply with BMBL protocols requiring them to refrain from interacting with any animals, e.g., for at least 72 hours following their contact with animals infected with FMD. The DEIS fails to analyze the possibility for such training to be accomplished entirely through the referenced distance learning training module to mitigate the potential risks associated with such contact.

- 2.3 The DEIS states that large-scale vaccine production would require an industry partner. The DEIS fails to state whether such an industrial plant could be constructed within the NBAF site, in the same manner that the British government research lab in Pirbright, England (where the 2007 foot and mouth disease outbreak originated) is adjacent to and conjoined with the Merial vaccine production facility.

The DEIS fails to examine the potential of disease cross-contamination arising out of the “hotel suite” design concept, whereby research spaces are not dedicated to a particular species, much less to a particular disease subject.

The DEIS fails to specify the “facility-specific standard operating procedures (SOPs) that would be developed according to USDA guidelines prior to commissioning and operation of the NBAF. Because operating protocols are as essential to disease containment as the building structure, it is impossible to adequately evaluate the risk of an accidental release in the course of those protocols without being able to evaluate the protocols themselves and the manner in which they may differ from the BMBL. This is as fundamental a failure as the lack of site-specific building designs in the DEIS.

Although it is stated at page 2-3 that each critical zone would be a box-within-a-box with hardened structural systems, it is stated at page E-24 that some of the highest-containment spaces will include windows. In general, the outside walls of the facility are the outside walls of the lab.

- 2-4 Although “multiple layers of security” are referenced, there is no indication as to who will provide that security. The Federal Protective Service has recently been found by the Government Accountability Office (“GAO”) to suffer from gross deficiencies, which are not addressed here. See GAO Report 08-476t, “Preliminary Observations on the Federal Protective Service’s Efforts to Protect Federal Property.” Nor is there any indication of the extent to which NBAF security will be assigned in part or *in toto* to local law enforcement, see e.g. GAO Report 03-847, “Actions Needed to Improve Security at Plum Island Animal Disease Center,” or the extent to which local law enforcement will actually be notified of such reliance, trained for and informed of the biosafety and biosecurity hazards within the NBAF, and who will bear the cost for such training. It is not indicated whether private security contractors, such as Field Support Services, Inc., which currently handles the majority of security duties at PIADC, will perform those functions at the NBAF. Nor is there any discussion of the staffing and training for firefighting functions, whether NBAF-based or reliant on local first responders.

It is impossible to evaluate the promised use of sustainable building practices in the absence of a plan for each site.

2.2.2 Operation of the Proposed NBAF

- 2-4 The DEIS states that NBAF could be a government-owned, contractor-operated facility. The DEIS fails to analyze the extent to which operation by private contractors has the potential to compromise facility maintenance (which is essential to biosafety for the surrounding community) in the event of cost-cutting shortchanges or a strike, as occurred

at the current facility in PIADC, as reported in GAO Report 03-847, “Improving Security at Plum Island Animal Disease Center.”

- 2-5 Outside inspection of the NBAF only once over a 3-year period is grossly inadequate to ensure proper oversight, maintenance and compliance with biosafety protocols. CDC inspections should occur randomly, without advance announcement, at intervals of approximately 6 months, and should be performed by an individual with extensive experience not only in BSL-3 and BSL-4 settings, but also in the BSL-3Ag context.

NBAF must maintain a log of all incidents such as accidental disease exposures and biosecurity lapses such as missing vials and animals, which should be available for public inspection at all times. Such logs should be maintained by a biosafety officer with high-level training in biosafety.

The EIS must include an exploration of actual protocols for emergency situations, such as animal escapes, fires, facility malfunctions, and medical emergencies; without this, it is impossible to adequately assess the risks posed by this specific facility.

- 2-6 Supervising laboratory staff must not only have training in the subject area of research, but must also have extensive experience in the supervised research matter, e.g., large animal high-containment infectious disease research, insectary high-containment infectious disease research, or BSL-4 disease vaccine reagent work.

The DEIS is grossly inadequate in failing to specify the waste treatment mechanisms to be used at the contemplated facility, without which it is impossible to evaluate the potential impacts to air, water, and other aspects of the respective sites’ environs.

Although the DEIS states that the “efficiency” of waste treatment would be verified by reference to heat and biological indicators, this is not adequate to ensure public safety. Each batch of waste released from the facility must be DNA-tested to ensure that pre-treatment fully eliminates the subject disease organisms before release into the environment.

The selected waste treatment system(s) pose additional environmental impacts not contemplated within the DEIS. For example, chemical disinfection (utilizing “corrosives/irritants, flammables, sensitizers, toxics, teratogens, and carcinogens,” as listed at p. 2-8) within such a massive facility can further impair the already-impaired Knap of Reeds Creek, into which facility waste would ultimately be discharged, where the South Granville Water and Sewer Authority does not have the means to test for or remove such chemicals during its treatment process. Incineration, which is noted as the benchmark standard in the USDA ARS 242.1 Facilities Design Standards, and as being “considered the most effective method for disposal of infected carcasses,” poses significant air quality impacts. As redundancy and multiple carcass disposal technologies are expressly contemplated, all potential impacts from each such method needs to be detailed in the EIS in the absence of a conclusive decision to use one particular disposal technology. There is also no discussion of the potential use of and impacts upon area

landfills (including which landfill will be used), or the possible creation of a landfill at the NBAF site itself, with the attendant impacts on groundwater and surface water (particularly at the North Carolina site, given the steep slope of the site toward a tributary of Falls Lake).

There is also no discussion of the additional risks posed by plans to locate the waste treatment facilities in a BSL-2 space, without the protections afforded by the higher containment levels, although the pathogen load in the waste material is elsewhere acknowledged as a significant risk factor.

- 2-7 The DEIS fails to specify the procedure for after-hours disease sample deliveries (particularly those of select agent materials), including the method for securing such deliveries, and the disposal of such materials in the event that no “responsible official” is notified in advance by the shipper.
- 2-8 The DEIS likewise fails to analyze the risks of a package that is shipped or received without perfect adherence to the packaging biosafety protocols, nor does it analyze the risk that a shipment could be sent to an improper recipient.
- 2-9 The EIS should specify the manner in which community representatives on the Institutional Biosafety Committee will be selected. The list of biological agents stored and studied at the NBAF must be publicly available to ensure proper community oversight. That list is not publicly available at PIADC, with significant detrimental effects on oversight and accountability.

2.2.3 Decommissioning of the Proposed NBAF

- 2-9 The EIS must state the anticipated life expectancy of the NBAF. It fails to analyze the potential “future uses” to which the NBAF could be transitioned. The decommissioning of the NBAF should be performed pursuant to the NEPA process to ensure public input on any repurposing or potential residual contamination.

2.3.6 Alternative Site Selection Process: Butner Site

- 2-24 Figure 2.3.6-2 We note that the conceptual design places the lab in the extreme northwest corner of the subject site, which is not consonant with the frequently stated purpose for the large 249-acre site: to provide a sizeable buffer around the lab. Is the rest of the site being reserved for additional labs or facilities? A landfill? We note that it is not likely that a separate NEPA process would be performed for additional facilities placed on the site.

2.5 Summary of Environmental Impacts and Costs

- 2-28 The site selection criteria were not designed to ensure mitigation of environmental effects, as their primary emphasis lay in proximity to certain infrastructure and workforce (see 2-10). It appears that DHS has dismissed out of hand the actual impacts posed by this massive project, and determined that no mitigation is therefore necessary. This is neither credible nor supported by the DEIS itself, which acknowledges some highly significant impacts.

2-29 The absence of any concrete design plans – and still less of any site-specific design plans -- wholly frustrates any effort to examine the stated preliminary cost estimates, most particularly for construction and maintenance. There is no discussion whatsoever as to the method, assumptions and designs from which those conclusory numbers were derived. Further, we note that the construction estimate for the Butner site is listed at \$523,711,811, although the total project estimate for the NBAF if sited in Butner has been identified as \$705,363,565 (see NBAF Site Cost Analysis at Section 4, page 3). The DEIS must detail who is anticipated to bear the difference in cost between these two figures.

2.6 Preferred Alternative

2-50 The “additional studies” referenced here presumably include the NBAF Site Cost Analysis, the Feasibility Study, and similar reports prepared by the NBAF Design Partnership. All such documents – in unredacted form – must be included in the Final EIS.

3.0 Affected Environment and Consequences

3.1 Introduction

The lack of actual, non-conceptual site-specific design details for the NBAF, the associated vaccine production facility, and the planned insectary bars meaningful review of virtually all actual site-specific impacts of the planned facility.

3-1, 2 Although reference is made to an environmental justice assessment, and although the Butner site is located in an area significantly populated by elderly and severely disabled individuals and minorities (many of whom are institutionalized and would be in a dire situation in the event that a disease release prevented or frightened institutional workers from continuing with their duties), the DEIS is devoid of an analysis of the impact of a potential release on these populations. Still less is there any analysis of potential alternatives and mitigation to avoid these grossly disproportionate impacts. The DEIS is entirely inadequate in this regard. The statement that “no disproportionately high or adverse effects to environmental or human resources are evident with any of the alternatives” lacks any basis.

3.1.2 Operations

3-4 We note that the Butner site is the only site that would require significant new infrastructure in all 5 categories: potable water, electricity, natural gas, sanitary sewer, and roadways. As the DHS calculations presume that the host site will bear the cost of such infrastructure improvements, those costs must be detailed in the FEIS.

3.2 Land Use and Visual Resources

3.2.7 Butner Site

3-25 Light pollution, which has impact far beyond the site and bears collateral impacts not only on the human population but also on wildlife for which this largely undeveloped area serves as habitat, is a significant issue at this site. That impact, which is not

adequately explored in the DEIS, is exacerbated by the existing light pollution from the nearby Federal Correctional Facility. We note that there is no consideration of whether this issue can be mitigated at all by using down-lighting and other light-pollution mitigative features. Likewise, building massing of potentially 90 feet (up to 9 or 10 stories) on the hilltop site is significantly out of scale with the surrounding area. This issue must be addressed.

3.3 Infrastructure

3.3.7 Butner Site

3.3.7.1 Affected Environment

- 3-48 The DEIS states that electricity would be supplied by Duke power through three substations, two of which would be built for the NBAF. The DEIS must include the cost of these substations, and must indicate who will pay for these two new substations. Further, the placement of these new substations will pose additional environmental impacts themselves, which must be addressed in the DEIS.

We note that the DEIS is devoid of any consideration of the potential impact on the electrical supply and resulting impacts on containment systems, due to the ice storms which commonly occur in the winter in this region, which can cause extensive power outages through downed power lines.

- 3-49 SGWASA's permit is currently under review, and the discussion of its capacity requires revision; see infra at discussion of DEIS page 3-359.

3.3.7.3 Operation Consequences

- 3-50 The estimated annual consumption (which reflects an average daily usage of 108,000 gpd) appears disproportionately low in light of the pre-expansion peak usage figure of more than twice that amount: 275,000 gpd.

Further, in light of the increasing frequency of drought-based water shortages in the region, and the vast anticipated water usage of the NBAF, and the anticipated 50-year lifespan of the facility, it would be environmentally irresponsible not to incorporate reuse and reclamation technologies in the NBAF design, regardless of whether such technologies are required at the moment.

We note that, despite the significant building surface area and significant fuel and electrical needs, and the long anticipated life of the facility there is no discussion of any attempt to incorporate solar technologies to mitigate electrical and fuel consumption. Such technologies could play a significant role in providing primary, secondary or tertiary power, fuel and hot water supply needs for the facility, as well as boosting redundancy and reducing impacts on area infrastructure needs. The NBAF appears to ignore "green" or lower impact building and power technologies. These technologies require discussion in connection with the consideration of the environmental impacts of the facility.

There is no discussion of the costs to supply the additional infrastructure required to support the NBAF's electricity needs at the Butner site. Those costs, including the cost to construct the Central Utility Plant, must be inserted, together with a statement as to whether those costs will be born by Homeland Security or are expected to be born by the host site, or Duke Power's ratepayers.

- 3-51 The SGWASA sewage pretreatment requirements must be reviewed in light of whatever revisions are mandated by new conditions imposed by the NC Division of Water Quality in connection with SGWASA's permit renewal application which is currently pending.

3.4 Air Quality

3.4.1 Methodology

- 3-57 The air quality information provided is so deficient as to bar meaningful commentary. As it stands, "the proposed pathological waste disposal method for the NBAF has not been determined" and might include an incinerator, with attendant air quality implications. Further, there is no "air emission data for the proposed NBAF, such as but not limited to process data, emission source data, and operating schedules." Ultimately, the DEIS may have a section designated "air quality" but it has no exploration whatsoever of real-world impacts posed by the facility. Still less does it explore potential site-specific, design-specific impacts. The words that appear in this section are useless and irrelevant.
- 3-60 The Galveston National Laboratory is not, standing alone, a valid comparator to the NBAF for purposes of estimating construction emissions, as Galveston is less than 1/3 the size of the NBAF, at 174,000 total gross square feet. See <http://www.utmb.edu/GNL/about/index.shtml>. Any figures for Galveston must be multiplied by 3; further, the comparison must account for site-specific design details and waste treatment details for the NBAF, as compared to those employed at the Galveston lab.

3.4.7 Butner Site

3.4.7.1 Affected Environment

- 3-80 This section must be updated to reflect the April 15, 2008 U.S.E.P.A. designation of the 8-county region that includes Granville County as a non-attainment area for ozone pollution. This region is the only one in the State without an agreement with the E.P.A. to clean the air. This section also fails to reflect the E.P.A.'s new standards, which were changed in February 2008.

3.4.7.3 Operation Consequences

- 3-81 The DEIS fails to reference an interruptible natural gas supply. All commercial rated customers can be cut off from natural gas during extremely cold weather as natural gas is sent to residential customers for heating. The Allied Siegri chemical plant in Moncure was forced to connect a new boiler as a residential customer (complete with its own separate supply line from the highway and its own home gas meter) because they could not burn a higher sulfur content fuel as standby (No. 2 fuel oil) until advanced air

modeling was completed and a cold snap was predicted. The commercial natural gas to the rest of the plant was shut off for 72 hours.

Further, if the NBAF design ultimately includes incinerators, the air permit will require test demonstration of compliance with air toxics standards. If the NBAF uses a significant quantity of chlorinated disinfectants or chlorinated water as cleanup, it will be difficult to demonstrate compliance with the chlorine emission limits without equipping the incinerator(s) with emission reduction controls. Such controls are usually wet scrubbers, resulting in water quality problems which must be addressed in the relevant sections of the DEIS. Due to potential damage to concrete rebar in the receiving publicly owned treatment works (“POTW”), high chlorine content wastewater is usually not allowed to be sent to a POTW. These issues must be addressed in the EIS.

The DEIS further fails to take into account the air quality impacts resulting from the anticipated vast increase in traffic in the vicinity of the site.

3.5 Noise

- 3-94 Although the C.A. Dillon school is directly adjacent to the Butner site, the DEIS is devoid of any evaluation of the noise impacts upon the already-troubled residents of that facility during the 4 years of construction. This disproportionate impact implicates environmental justice concerns that must be addressed. Four years of significant noise is not a mere “temporary effect” in the course of the education of young people, particularly those who are already struggling in the academic system.

3.6 Geology and Soils

- 3-114 The DEIS fails to note the existence of a fault line which runs along Knap of Reeds Creek near Range Road, directly adjacent to the proposed site.

3.7 Water Resources

3.7.7.2 Construction Consequences

3.7.7.2.2 Storm Water

- 3-148 This site slopes steeply toward the already-impaired Knap of Reeds Creek. The facility is anticipated to require 244,235 cubic yards of cut and 216,701 cubic yards of fill. See NBAF Site Cost Analysis at 2-11. The mere statement that BMPs will mitigate stormwater runoff effects is inadequate.

3.7.7.3 Operation Consequences

3.7.7.3.2 Storm Water

- 3-149 The DEIS fails to address the potential stormwater implications of the animals at the proposed NBAF. If a herd of cattle (presumably only healthy cattle would be kept outside) is maintained on the property, the concentrated animal feedlot regulations may be implicated, due to runoff from manure and urine on the steeply sloping site, which feeds into the already impaired Knap of Reeds Creek.

The DEIS also fails to address the impact of such a vast quantity (30 acres) of impervious surface on site runoff to Knap of Reeds Creek. See DEIS at 3-204. Just across the

Durham County line, impervious surface construction is limited to 6% of parcel area, in order to protect the Neuse River watershed of which the subject site is a part. This facility poses a huge impact to water quality.

Likewise, the DEIS wholly ignores the potential water quality impact of the 500,000 gallons of diesel fuel storage tanks which is planned in conjunction with the Central Utility Plant, to support the planned thirty-day operation of the facility in the event of a power or natural gas disruption. See NBAF Feasibility Study at Section 4.10, page 2. The DEIS has wholly failed to consider the consequences to groundwater and stormwater in the event of a leak from this/these storage tank(s).

The agencies who will be in charge of the NBAF have demonstrated a very poor track record with this issue at the Plum Island site. As referenced at DEIS page 3-338, an underground fuel oil pipe leak was discovered at Plum Island (which stores approximately 650,000 gallons of petroleum products) in 1995. Evidently, nothing was done for five years, until 2000, when an “automated fuel recovery system was installed.” 4,500 gallons of fuel oil was removed. This evidently was not the only such spill, as others are referenced at that page. Further, apparently “lack of funding has prevented the complete remediation of these areas.” DEIS at 3-338. The historically demonstrated reality of such funding shortages must be taken into account in the EIS.

3.7.7.3.3 Groundwater

3-150 As Homeland Security has yet to determine the manner in which it will dispose of facility waste, such that we cannot know whether a landfill for facility waste will be constructed within the 249-acre site, as at Plum Island, it is impossible to state whether groundwater (and surface water) will be adversely impacted by facility operations. This issue must be addressed in the EIS.

3.8 Biological Resources

3.8.7 Butner Site

3.8.7.1 Affected Environment

3.8.7.1.5 Threatened and Endangered Species

3-199 In light of the acknowledged presence of numerous rare and endangered species (“including one of the largest populations of the federally endangered smooth coneflower in the United States”) in the immediate vicinity of the site, the DEIS must reflect a thorough on-site examination to determine the extent to which these species are actually present at the site. A mere “database review” is inadequate.

3.8.7.2 Construction Consequences

3-203 See comments for page 3-149.

3.8.9 Potential Operational Consequences for Wildlife

3-213 This section must include an examination of the potential impacts on avian wildlife in the event of a release of diseases such as the two avian diseases which are identified in the NBAF Feasibility Study.

3.8.9.1 Foot & Mouth Disease

- 3-214 The promise set forth here that DHS would develop a site-specific Standard Operating Procedure to deal with control of wildlife in the event of a foot and mouth disease release is wholly inadequate to address this critical issue. There are no models or examples of this situation being addressed ever before by any entity. This is an absolutely vital issue in considering whether foot and mouth disease can safely be studied on the mainland. Failure to address this issue in depth in the DEIS, now, on a site-specific basis is a gross deficiency and must be remedied. The extensive and for all practical purposes unmitigatable presence of deer at all of the mainland sites is a critical shortcoming in the plan to site the NBAF on the mainland.

Homeland Security's responses to questions posed on this issue during the DEIS hearing process highlight how grossly ill-considered this issue has been to date, and how essential it is to fully evaluate the issue before a decision is made about the siting of the NBAF.

For example, the DEIS refers to "population reduction" of animals such as deer, which are widely endemic to the Butner area and are both susceptible to and carriers of FMD. Homeland Security and USDA officials stated variously at those hearings that such population control would be conducted through use of poison and/or through hunting. Both of these threaten additional risks to the larger environment, specifically because it is well-known that deer dying from poison, gunshot or being struck by an arrow will seek a water source. Infected deer dying in or adjacent to streams and other water bodies threatens to increase the spread of FMD through the water supply. Further, how would such poison be dispersed, and with what potential effects upon domestic and domesticated animals that may come across the poison?

3.8.9.2 Rift Valley Fever

- 3-218 As with FMD, the lack of a concrete plan to address an outbreak of Rift Valley Fever is a critical failing in the plan to site the NBAF at any mainland location. Further, the contemplated "repeated aerial spraying [for mosquitoes] . . . over an extended period of time" poses environmental and human health effects that must be addressed in the EIS. The DEIS's facile dismissal of the potential consequences in reliance on a putative "extremely low probability of an accidental release" is grossly inadequate, particularly in light of the extensive shortcomings, detailed below, in the risk analysis methodology employed in the DEIS.

3.8.9.4 Beneficial Effects

- 3-220 This section is no more than puffery. To be meaningful, it should detail those diseases which have actually been eradicated through, or now have broadly effective vaccines because of, the research which was conducted over the course of Plum Island's 50+-year history. This listing would reveal how naïve and aspirational the alleged "beneficial effects" truly are.

3.10 Socioeconomics

3.10.1 Methodology

- 3-227 Although the DEIS references “anticipated changes in . . . housing values”, it fails to consider the potential adverse impact on property values in the vicinity of the proposed facility, much as property values decline next to nuclear facilities or prisons. This must be addressed.

Further, although the DEIS notes that “school-aged children and the elderly are a sensitive population groups that have additional needs and require additional services,” the DEIS failed to consider the impacts on the more than 7,000 institutionalized individuals that live in the immediate vicinity of the Butner site.

3.10.7 Butner Site

3.10.7.1 Affected Environment

- 3-297 The DEIS should include Orange and Chatham Counties in the “expanded area of study” for the agricultural and livestock vulnerability analysis and discussion; they are as close to the site as Franklin County, and closer than many parts of Wake, Halifax and Mecklenburg Counties.
- 3-282 The source for the livestock census figures (see Appendix C, table C-92) is given as “DHS 2007.” These figures should come from the NC Department of Agriculture and/or the NC State Agricultural Extension office, and should be broken out by species. Likewise, the value of the North Carolina livestock and poultry population should be taken from these sources.

The number of jobs (248) associated with hunting in the 8 counties appears to be significantly understated. We are uncertain what source is referenced by “MIG 2006”, which is the cited source in the DEIS. According to the Congressional Sportsmen’s Foundation, hunting generates 8,800 jobs in North Carolina. See www.sportsmenslink.org. The EIS must analyze the potential impact on this hugely significant economic activity in the event of a release. Although that impact is fleetingly acknowledge at DEIS page 3-216, by reference to plans to “reduce or depopulate infected wildlife in either the infected zone or the surveillance/movement control zone” in the event of a foot and mouth disease release, there is no discussion of (1) how or why culling would be limited to infected animals, or (2) how this process would impact the hunting sector of the North Carolina economy.

- 3-283 Under the “Population” heading the reference to the “South Milledge Avenue site” should be corrected to the “Umstead Farm site”, and population figures should be checked to confirm that they are for the correct site. Also, there is no reference to the Polk Youth Center or the new Central Regional Psychiatric Hospital and their respective residents.
- 3-284 Although reference is made to the 3 low to medium security prisons in the Butner Federal Correctional Complex, the DEIS fails to mention the Butner Federal Medical Center, which houses male inmates of all security levels, and is the largest medical/psychological facility of the entire federal prison system. The prisons and other

referenced institutions raise significant environmental justice issues which are not addressed at all in the DEIS.

Also, the DEIS apparently fails to take into account the number of African-Americans housed in the Butner Federal Correctional Complex, which is disproportionately significantly greater than the population at large.

- 3-285 The “study area” appears to expand or constrict based on convenience – sometimes it is the Town of Butner, and other times extends through 8 counties. For purposes of the Age discussion, the focus should be on the Town of Butner, which has a significantly high elderly population.
- 3-288 There is no discussion whatsoever of what if any training has been received by Butner first responders which would be relevant to an emergency at the NBAF. Nor is there any discussion of the cost of providing such training, and whether that cost would be born by the locality, the state or DHS. Nor is there any discussion of what if any abilities area medical centers may have to deal with outbreaks of the diseases to be studied at the NBAF.

3.10.9 Accidental Release Scenario

3.10.9.5 Butner Site

- 3-309 This section as a whole is utterly, grotesquely deficient and shockingly specious – all three paragraphs of it. The DEIS fails to include any discussion of the possible impacts of an accidental release of the two poultry diseases referenced in the NBAF Feasibility Study, namely Newcastle Disease and avian flu. Given North Carolina’s extremely substantial poultry sector, the DEIS must fully explore the impacts of a potential release of these diseases. As detailed above, the livestock numbers should be based upon NC Department of Agriculture and NC Agricultural Extension Office data.

There is no discussion of possible mitigating responses in the event of a release; no discussion of the impact of a release upon the more than 7,000 institutionalized individuals who live within 3 miles of the site; no discussion of the potential for quarantines or culling of livestock populations and wildlife populations; no discussion of emergency responses; only the most cursory positing of economic loss.

The DEIS fails to explore the possible impact of a release of Nipah virus. Nor is there any discussion of the containment of and potential release of any animal or zoonotic prion diseases.

The DEIS fails to explore the impacts of a release given the no-action alternative. Under the no-action alternative, certainly foot and mouth disease will continue to be studied at Plum Island. Review of release impacts given the no-action alternative must detail the history of containment breaches and pathogen releases at Plum Island.

Although the study area for the Agricultural part of the Socioeconomic section included 8 counties, the DEIS has improperly limited the focus in this section to the livestock

population of the Town of Butner. There must be a discussion not only of the 8-county study area, but of the potential impact upon entire State in the event of a release.

3.11 Traffic and Transportation

3.11.7 Butner Site

- 3-322 There is no discussion of the expected number of trips of heavy equipment and construction vehicles (e.g., dump trucks carrying soil, backfill and building materials) to and from the site over the anticipated 4-year construction period, nor of the wear and tear on area roadways as a result of that increased usage, nor of the costs to maintain and repair those roadways, nor of whether that cost will be borne locally or by Homeland Security.
- 3-324 The DEIS fails to examine the traffic impacts on the full 4-mile corridor between I-85 (which will surely be the main route to the site) and the site. It must also detail the roadway and traffic signal improvements which are anticipated to be necessitated by the proposed lab, together with the cost of such improvements and whether those improvements must be paid locally or will be paid by DHS.

The DEIS states that the site “would be accessed primarily from Range Road.” Does this mean that most employees are expected to live in Durham County and come from the southwest? There is no analysis whatsoever of the paths expected to be impacted by the anticipated location of the employees of the facility.

Although there is reference to the emergency services vehicles possessed by the Town of Butner, there is no discussion of the adequacy of these services in the event of an emergency at the facility. Nor is there any discussion of the impact of such an emergency on first responders in Durham County, who are equally close to the site.

3.11.9 Transportation Shipments of Infectious Materials

- 3-328 We query whether USDOT data is the most comprehensive source of data regarding incidents in the transportation of pathogens, given the structural disincentives to reporting which were noted in the October 2007 Government Accountability Report on the problems associated with the proliferation of high-containment biological research labs. Further, given the lack of unified oversight of high-containment biological research labs in the U.S., as noted by the October 2007 GAO report, it is unlikely that any sufficiently comprehensive database exists regarding such incidents. See also DEIS page B-1. However, there should be consultation with the CDC to determine what if any data they possess on this topic.

Reference should be made in this section to the incident referenced on page B-9, in which 1,025 vials of anthrax were shipped from Lawrence Livermore National Laboratory, which shipment when received contained 2 vials missing caps and a third vial with a loose cap, and in which a second shipment contained an incorrect number of vials upon receipt, resulting in the exposure of two workers. Likewise, this section should include the incident referenced on page B-11, in which live (rather than dead) anthrax samples were improperly sent from the Children’s Hospital and Research Center, leading to the

exposure of 7 scientists. This section should include the incident referenced at page B-12, in which “an improperly packages shipment [of bird tissue infected with West Nile Virus] containing dry ice burst,” resulting in the exposure of workers at a Fed Ex shipping building. Other such incidents should also be referenced.

Further, there needs to be an examination of the potential for an accident in the shipment of pathogens over the anticipated 50-year lifespan of the lab.

3.13 Waste Management

3.13.1 Methodology

- 3-342 This entire section is deficient, as the DEIS does not indicate the disposal system to be used for the NBAF’s animal and other infectious waste and carcasses. In essence, there is nothing to comment on, because this discussion is wholly contingent and speculative.

3.13.2 Waste Management Impacts Common to All Alternative Sites

- 3-343 There is no discussion of which landfill(s) and incinerator(s) (e.g., the Person County landfill?) are expected to receive debris and hazardous waste generated both in the course of construction and during operations, and in what volume, and what impacts that waste might have on existing landfill capacity.

3.13.8 Butner Site

- 3-359 The information regarding SGWASA’s commercial and industrial capacity are outdated, and must be updated not by talking to the Granville Chamber of Commerce (as reflected in the DEIS), but with the Director of SGWASA and the North Carolina Department of Environment and Natural Resources, Division of Water Quality. SGWASA’s operations are already plagued by extensive violations of its permit, which is now under review. On May 7, 2008 SGWASA received a copy of the draft permit for their facility from the Division. The draft permit contains significant changes from SGWASA's current operational permit, including a flow limit of 0.2 million gallons per day. Moreover, SGWASA does not currently have a waste water flow recorder, in violation of Division requirements that flow measurements be continuous and recorded. An 18-month compliance schedule was provided to SGWASA allowing them time to acquire fund, design, purchase and install a continuous flow recorder. The Division is currently considering a moratorium on new hookups into SGWASA, until SGWASA demonstrates a track record of compliance. Further, reference to 69,000 gpd is not consistent with other parts of the DEIS, which states that NBAF wastewater flow is expected to range to 150,000 gpd. See page 3-51; see also page 3-360. It appears further inconsistent in that NBAF water usage is expected to range to 275,000 gpd (see DEIS page 3-50); there is no explanation of the 125,000 gpd difference between the intake and outflow. Ultimately, SGWASA is simply in no shape to handle the 150 to 275,000 gallons per day of wastewater that the NBAF is expected to produce even before its expansion. It certainly cannot handle any release of improperly or inadequately treated infected waste from the NBAF. Nor is Knap of Reeds Creek, which is already listed as impaired. See DEIS page 3-146. These existing conditions must be reflected in the discussion at this section.

3.14 Health and Safety

See generally the extensive comments below on Appendix E. This section should be combined with Appendix E (with the Appendix E analysis being moved to this section in toto), because the substantial but not exact duplication discourages meaningful review.

3.14.3.4 Intentional Acts and the Threat Risk Assessment

3-434 This section is devoid of meaningful content, as the actual “Threat and Risk Assessment was developed outside of the EIS process” has been omitted from public review based on alleged security grounds. The recent discovery that a Ft. Detrick scientist was responsible for the anthrax attacks that provided the justification for the post-2001 rapid proliferation of high-containment biological research labs requires that this issue be addressed in the text of the EIS with full transparency, and not withheld on putative security justifications. Likewise, the recent arrest of Aafia Siddique on charges of terrorism, and the discovery that she possessed a list of potential targets that included Plum Island, requires that the community be included in – not excluded from – the information regarding the potential for such actions against an NBAF in their area.

3.14.4 Site-Specific Consequences

3.14.4.5 Butner Site

3-487, 488 At bottom, the only site-specific comments in this section are a listing of livestock in the area (undifferentiated as to species, which undercuts its usefulness given the different disease profiles of FMD in each species); and statements that “livestock and wildlife (deer and boar) in the vicinity of the North Carolina site provides ample opportunity for FMDV to establish in the environment upon a release,” “the area around North Carolina would provide an environment for RVFV to be easily transmitted once released,” and “the consequences of a large release of Nipah virions would be as severe as that of RVFV or FMDV in this area.” Despite the inclusion of charts and words, those charts and words have no true content that reveals anything about the potential impact, and the actual risk of such an impact, in North Carolina.

3-488 The statement that “because of the potential for easy spread of FMDV, RVFV, and Nipah virus diseases via infected livestock, wildlife, and vectors, the overall risk for the North Carolina site is designated as risk rank II (moderate)” is deeply flawed, because it rests on a fundamentally unsound risk assessment methodology, as detailed below in the comments on Appendix E. That methodology is necessary so limited as to be meaningless, because there are no site-specific design details for the NBAF, and because many of the essential containment systems have not even been selected, and thus cannot be analyzed. The only thing we know is that if and when one of these diseases is released from the NBAF, the consequences will be far-ranging and severe.

3.15 Mitigation

3-502 The statement that “all practicable means to avoid or minimize an environmental harm from the selected alternative have been incorporated into the design of the NBAF” is a meaningless assertion, given the absence of any site-specific designs and indeed of fundamental decisions regarding the NBAF’s core systems. This sentence must be deleted as baseless.

- 3-503 Upgrades by local utility providers is not mitigation, in the absence of federal funding to implement the proposed upgrades, which in the case of the Butner site are required for every aspect of utilities.
- 3-504 No mention is made of any measures to mitigate the noise impact on the C.A. Dillon School during the four years of construction. Nor is any mitigation indicated for the noise associated with the significant increase in traffic to the facility.

It does not appear that Granville County or North Carolina have seismic building codes; thus, the referenced mitigation has no meaningful yardstick.

BMPs are wholly inadequate to mitigate soil erosion, particularly given the steeply sloping site and huge areas of land to be excavated and filled. State Land Quality program for oversight of BMPs is notoriously understaffed, and oversight of projects led by federal entities is historically even weaker than that of private projects. Further, inspections and enforcement from the State DENR Regional offices weakens with distance from the offices, slowing response time and weakening inspection patterns. Further, as the Butner site is screened from the roadways by trees, the public will be unable to observe sediment and erosion practices and plan violations. There is no local jurisdiction or funding for supervision.

- 3-505 The potential for groundwater contamination exists not only during construction, but during operations as well, with both chemically and radiologically hazardous substances to be employed at the facility, as well as biohazardous materials handled before, during and after study procedures. BMPs and a response and mitigation plan do not assure that no spills will contaminate the groundwater. Given the fracture geology of this region, any contaminants can spread quickly and unpredictably to off-site groundwater, potentially impacting private or public drinking water wells, or being released to local surface waters from groundwater discharge to streams. The NBAF must include inside and outside perimeter shallow and deep aquifer monitoring wells, with at least twice annual monitoring for all organisms under study and all toxic or hazardous substances used or stored on site at levels reportable under Tier II to the EPA, State CERCLA and the local Emergency Planning Committee. Under no circumstances should the NBAF be exempt from full accountability for providing such reporting on a timely basis, as well as meeting all other LEPC requirements and reporting timely to all emergency responders at the site and nearby institutions, residents and businesses.

We also note that avoidance of wetlands and other habitat disturbances is referenced only for the NBAF itself, and not for the extensive infrastructure development (water and wastewater lines, electrical and gas supply, and access roads) that would be required for the Butner site, or even for the dual perimeter fence. BMPs will not be adequate to avoid significant impacts, as detailed in the comments regarding storm water above.

- 3-506 The design features referenced as mitigation are not detailed in any site-specific renderings which would enable review of their adequacy or robustness. Further, any such

features are dependent on frequent inspection and redundant checks to ensure proper maintenance and avoidance of structural, filtration or interlock failures. Such inspections should be performed at least quarterly by independent agencies and not relegated to onsite government or contract staff. In addition, local emergency responders who have been trained in bio-safety procedures and standards must be allowed to participate in these inspections at least annually in order to report to responding units, local officials and the public the status of all systems and procedures at the facility.

The fact that an arthropod colony will be developed and maintained at the facility only increases the risk that already infected vectors could facilitate a release of pathogens into surrounding wildlife and potentially to livestock and human populations. No reproductively capable arthropods can be safely maintained at the NBAF. Instead, all disease vectors must be bred offsite, completely sterilized and shipped to the site free of all infection. The number of vector arthropods must be catalogued for each exposure study, and within 2 days of study initiation all such arthropods must be captured, accounted for and killed.

Planning for containment and elimination of exposed animals must long pre-date the installation of any animals, disease organisms or insect vectors at the site, and must be pre-approved by local and state elected officials, emergency management and a local advisory body. It is completely inadequate to develop such plans “in the event of a release.”

Economic impacts may be made less likely through the proposed (but yet undocumented) design features, but are not eliminated. The resulting impact to agriculture, public health and recreational tourism would be at least regional in the southeast and potentially nationwide if FMD, RVFV or another select agent were released from the NBAF. The estimated economic impacts are, as detailed infra, underestimated by one to two orders of magnitude.

- 3-507 The EIS must consider not only the potential for waste streams to “exceed local [sewage treatment facility] acceptance criteria,” but also the potential for that waste to exceed critical effluent concentrations for BOD, nitrogen and other typical parameters, particularly at the Butner site, given that SGWASA discharges to a federally recognized impaired low flow stream and downstream public drinking water reservoir suffering from low dissolved oxygen, excess algal growth due to high nutrient inputs, and toxicity.

Even more critical is the impact of organisms, as yet uncharacterized as to their ultimate form and volume (given the lack of a decision regarding waste treatment systems for the infected animal waste and carcasses), which are completely unregulated by the Clean Water Act. It is utterly unjustifiable on the basis of public health, economics and liability to ask a publicly owned and operated wastewater treatment works to accept and treat such waste streams. No possible utility upgrade could reduce the potential for the release of dangerous pathogens which are unregulated under the Clean Water Act and which the operators have no means to analyze or treat, nor do they have any means to prevent that waste from mixing with other waste streams.

3-508 CDC/NIH and OSHA inspections are infrequent and not always unannounced, violations are unenforced, and there is inadequate public disclosure of security and operational procedures. The cited mitigation is inadequate to ensure worker safety and health. Nor can primary containment be relied upon to prevent laboratory-acquired infections and releases, given the ultimate certainty of human error in the operation of such a vast facility over decades.

Likewise, infrequency of inspections and the fact that they are not always unannounced can be expected to result in inadequate maintenance and repair of secondary containment, inadequate supervision and security practices. There are few if any regulatory consequences for violations, inadequate public disclosure of security and operational incidents.

3.16 Unavoidable Adverse Impacts

3-509 All of the listed impacts can be mitigated by building at the Plum Island site, an 840-acre uninhabited island.

Also listed in this section should be impacts associated with a pathogen release from the proposed facility, because given the size and complex mission of this facility, and the inevitability of human error coupled with structural deterioration over time, such impacts are inevitable. Only siting at Plum Island can mitigate those impacts.

3.17 Relationship Between Short-Term Uses of the Environment and Long-Term Productivity

3-509 Here, as with the “unavoidable adverse impacts,” the adverse impacts are not comparable for all sites: the impacts on the Plum Island site are far less than at any of the mainland sites. Further, the putative benefits from the lab are not site-specific. Nor in fact are those benefits supported by any analysis whatsoever in the DEIS; this statement is merely an ipse dixit assertion of no substance.

3.18 Summary of Significant Effects

3-511 Again, the DEIS contains no analysis whatsoever to support any of the entirely speculative putative “beneficial effects.” In the absence of detailed and documented support, the final 4 rows must be deleted from Table 3.18.2.

As there is no substantive information regarding the systems to be used at the NBAF which would impact air quality, and as the Butner site is mischaracterized as holding “attainment” status when in fact it is not, the characterization of air quality impacts as “minor” is baseless. The same comment applies to water quality, given the impaired water bodies which would be fed by the NBAF and the lack of any definitive waste treatment details. The same also applies to waste management.

The assertion of minimal environmental justice impacts at the Butner site is appallingly off-base, given the large population of institutionalized individuals in the immediate area, who would fall within the zone of restricted movement in the event of a release, and

given the disproportionately large minority and elderly population in the immediate vicinity of the site.

This summary is also risible in its failure to take into account the effects of a potential release, which is the 900-pound gorilla that Homeland Security elects to ignore. Normal operations constitute only the tip of the environmental impact iceberg for a facility such as this; it is the inevitable eventual release that poses the catastrophically significant impact, and that impact is entirely absent from this chart.

Appendix B Review of Biocontainment Lapses and Laboratory-Acquired Infections

- B-1 The reference to a suggestion that “an overall decrease in LAI can be expected” must be qualified against the statistics regarding LAIs; only if the rate of LAIs caused by human error is decreasing can this be stated with any validity.
- B-2 There is nothing to indicate that the NIAID record is predictive of, comparable to or relevant to the NBAF, in terms of containment risks (most particularly the special containment issues posed by large animal infectious diseases research in which there is no primary containment barrier such as a biosafety cabinet, and where containment is complicated by the large volume of waste and carcasses from the infected animal subjects). Inclusion of this section is statistically irrelevant and ultimately misleading. There should instead be a detailed review of the operational history of the Plum Island laboratory, and other high-containment large-animal research facilities worldwide.
- B-5 The full CDC compilation of 111 Select Agent incidents should be included in the DEIS.

Appendix C Socioeconomics Tables

Appendix D Potential Economic Consequences of Pathogen Releases from the Proposed NBAF

- D-1 The DEIS grossly understates the economic impact of the 2001 FMD outbreak in England as a mere \$5 billion. The Animal and Plant Health Inspection Service (“APHIS”) of our own USDA states in its August 8, 2007 white paper entitled, CEI Impact Worksheet: Foot and Mouth Disease, United Kingdom, that “[m]ore than 6 million animals were slaughtered, costing an estimated 17 billion dollars.” This requires correction to reflect the full cost of the UK outbreak, to enable the reader to accurately assess the true potential consequences of a FMD outbreak in the far larger livestock industry in the U.S., and in particular the hog industry in North Carolina, which can greatly amplify the consequences of a foot and mouth release.

The DEIS’s estimate of the economic consequences of a FMD outbreak in the U.S. is likewise grossly understated. The USDA issued its Economic Research Report No. 57 in May 2008, entitled “Economic Impacts of Foreign Animal Disease.” That lengthy study states at page 1 that “[t]he potential losses from an FMD outbreak in California are estimated to range between \$8.5 and \$13.5 billion (Ekboir). A substantial share of those estimated losses, \$6 billion, is attributed to an embargo on U.S. meat exports. Paarlberg,

Lee and Seitzinger (2002) estimate that an FMD outbreak similar to the one that occurred in the U.K. during 2001 could generate U.S. farm income losses [as distinct from total economic losses] of \$14 billion.”

- D-1 The DEIS fails to include any site-specific risk or economic modeling of a potential disease release.
- D-3 Because NBAF’s stated body of research includes genetic modification of disease organisms, it is improper to exclude Nipah Virus from the potential consequence analysis merely on the basis that its current vector does not occur in the Western hemisphere. We must anticipate that the Nipah flying fox fruit bat vector will be brought to NBAF for study in conjunction with the study of Nipah (just as NBAF shall host an insectary to study other disease vectors). Further, Nipah has already demonstrated the ability to adapt to other hosts – hence, in part, its zoonotic status. If we believe that a release of Nipah virus will not have consequences for the U.S. if it is released, then there is no reason to study it in the first place as part of NBAF’s biosecurity mission.
- D-4 The DEIS fails to state that animals which do recover from FMD exhibit severely compromised productivity in milk and meat production.
- D-5 Although the DEIS notes that birds, dogs, cats and rodents can carry the disease, it fails to mention horses as potential carriers, and fails to identify the control measures which might be taken against these potential carriers.
- D-8 The statement that “total losses to capital and management over 16 quarters was estimated to range between \$2.773 billion and \$4.062 billion” is misleading. First, the term “capital and management” is not defined here so as to let the reader know what items of economic loss are not included in that estimate. Second, this approach is not an apples-to-apples comparison, since elsewhere the DEIS variously speaks of “GDP losses” (D-1), “impacts to the livestock industry” (D-7), “cost [to the] agricultural sector” (D-7), The DEIS must state the total economic loss to all sectors of the U.S. economy (including but not limited to livestock losses, lost business from trade bans and decline in U.S. consumption, lost business to feed suppliers, tourism and losses in economic sectors other than agriculture, and government costs in implementing control measures) in the event of an FMD release, and it must do so clearly, up front, and in the Executive Summary as well.

Presumably, the losses to the U.S. livestock industry in the event of an FMD outbreak similar in scale to the 2001 U.K. outbreak would fall somewhere between the \$10 billion and \$30 billion numbers referenced at D-7, with total U.S. economic losses (including government costs and economic impact to other sectors of the economy) would be significantly higher. This number must appear in the FEIS.

The EIS must reflect a worst-case scenario analysis; there is no basis for limiting the estimate to 16 quarters, nor is any such basis for this arbitrary number discussed in the source study. Indeed, the source study cited in the DEIS states that “[a]nimal losses and

duration of the FMD outbreak are sensitive to the conditions assumed for the outbreak, i.e., that it started on small pig farms and was confined to them. Alternative scenarios could result in higher costs than reported in this analysis.” USDA ERR-57 at p. vii.

- D-9 The DEIS fails to state the value of all cloven-hoofed animals in North Carolina.
- D-11 Although the DEIS elsewhere references attempts to control a potential Rift Valley Fever outbreak by larvaeciding mosquito breeding grounds, it fails to detail the impacts of such a campaign in an area such as the Butner site, which is in close proximity to 5 major drinking water reservoirs.
- D-13,
- D-14 The DEIS must include the \$50 billion potential consequence in Executive Summary
- D-14 The DEIS fails to list the various potential insect hosts (including various tick species and biting fly species) with a matrix of which diseases currently present at PIADC together with those contemplated for the NBAF, reflecting which disease can be carried by each such host present in the environment for each site. A list is given of diseases to which one species of mosquito is receptive (*Aedes albopictus*), but this is not sufficient to afford a reasonable evaluation of the potential worst case scenario, including the potential for diseases released to remain present in the environment through seasonal changes.
- D-16 Given that pig farms suffer the most from outbreaks of Nipah Virus, the EIS must detail the potential impact of a Nipah outbreak upon North Carolina’s very large commercial pig production.
- D-19 The DEIS needs to describe the extent to which quarantines would restrict human movement, and the geographic area expected for quarantine under a worst-case scenario analysis.
- D-21 The DEIS needs to explain how hypothetical statistics for the Australian pig industry are predictive of or comparable to the U.S. pig industry, and why the calculation cannot simply be performed for the U.S. pig industry, which may operate quite differently, given the intensive methods used particularly in North Carolina, which may well increase the effect of an outbreak.

Appendix E Accidents Methodology

This section is comprehensively flawed, because the lack of actual site-specific designs requires virtually all information to be assumed. (See page E-67: “Event trees require knowledge of potential initiating events (equipment failures, system upsets, operator errors, etc.) that could cause potential accidents and knowledge of safety system functions and procedural steps that could mitigate the effects of each initiating event.”; there’s a complete lack of any concrete information to use as a starting point.) Many of those assumptions are, as detailed below, demonstrably inapt. For example, it is assumed that the facility is always new, and will thus

have a lower systems failure rate, even though that number is occasionally taken out across the anticipated 50-year life of the facility. The facility will not be new for most of its lifespan.

A more appropriate approach, with greater grounding in real-world events, would be as follows: list all accidents which have occurred at BSL-3, BSL-3Ag and BSL-4 facilities nationwide over the past ten years; to account for underreporting in accordance with the pattern documented in *High Containment Biosafety Laboratories: Preliminary Observations on the Oversight of the Proliferation of BSL-3 and BSL-4 Laboratories in the United States*, by the U.S. Government Accountability Office, October 4, 2007, multiply the number of accidents by the factor of underreporting to get an adjusted figure; categorize the accidents in terms of consequence and assign percentage distributions; determine the number of total square feet of BSL-3, BSL-3Ag and BSL-4 space in the examined facilities; divide the number of accidents by that total number of square feet; multiply that number by the total number of BSL-3, BSL-3Ag and BSL-4 space square feet at the NBAF; multiply that number by 5 to reflect the anticipated lifespan of the NBAF; multiply that number by the percentage distributions of accident consequence categories. By using a distribution of all high-containment facilities, the suggested approach will reflect different systems and personnel failure rates across a variety of facility ages, which will also more properly reflect changes in rates over the life of the NBAF itself.

The Appendix E analysis also is flawed because it treats each event as having an independent probability. This is not accurate, given the domino effects that emergent events can generate, such as poor human responses under stress situations.

The analysis used in Appendix E is also flawed because it fails to include the vaccine production facility in the square footage, nor does it include the large amount of disease matter expected to be housed at that facility. It also fails to include space and personnel outside the BSL-3, BSL-3Ag and BSL-4 areas, such as the areas which will treat infected waste which are in a lower containment level but have a potential high consequence in the event of for example a sewer break (as happened both at Ft. Detrick and at the government lab in Pirbright, England), even though those areas and personnel will have interactions with infectious material.

It is further flawed in failing to take into account the risk of a terrorist incident, a strike or a disgruntled employee's bad acts, a possible sewer leak of untreated infectious waste, or a landfill or incinerator accident (which cannot be discounted given that DHS has yet to select waste disposal systems).

E-6 The DEIS is inadequate because it fails to apply the risk analysis to the actual designs to be used at each site. As noted, risk analysis techniques used in the DEIS were qualitative rather than truly quantitative, given this lack of actual designs for review. Without an actual design, the pronouncements in this section are speculative and insufficient to provide real-world guidance to decisionmakers.

E-7 Discussions about "mitigated risk" are inadequate, given the lack of an actual design reflecting the putative mitigation systems and the equal lack of the actual biosafety protocols to be used at the subject facility. As stated at this page, "[b]ecause the NBAF is currently at the conceptual design stage, much of the detail required to fully characterize

the system failure probabilities does not exist.” Under these circumstances, this section is grossly inadequate, regardless of its length.

- E-8, 9, 10 The cited data dates to 1981; it is not evident that those failure rates remain applicable.
- E-13 Although the DEIS states that there is a “need for a robust and comprehensive emergency response program” which would be “an essential safety control,” there is no discussion of who is to provide that program (privately contracted, local, state and/or federal agencies), who bears the cost of that program, who provides the training, or the nature of that training. In the absence of such a discussion, it is impossible to assess the extent to which such a program will or will not mitigate the consequences of a disease release. Also wholly absent is any discussion of facility security systems and staffing, which makes it impossible to realistically evaluate the actual risk that an intentional security breach (either by facility employees or outside actors) could result in a disease release, as occurred for example when a Ft. Detrick scientist appropriated anthrax samples and sent those through the mails.
- E-14 The DEIS fails to include worst-case risk analyses for the poultry diseases contemplated in the NBAF Feasibility Study, which DHS has acknowledged will be not only stored but used at the NBAF. The DEIS has no worst-case scenario analysis of potential impacts of a disease release on North Carolina’s very significant poultry industry. Likewise, the DEIS fails to include a worst-case scenario and risk analysis for prion diseases, which have unique characteristics in their persistence and in the difficulty in eradicating prion-infectious material. Inclusion of such diseases is essential for a facility that will study animal and zoonotic diseases, which is expressly contemplated to pick up all of PIADC’s mission and thus all diseases housed there, and which is expressly intended to be the only such large animal high-containment laboratory.
- E-20 The DEIS notes that “[b]ecause training will be performed with select agents, appropriate requirements for security, storage, inventory control, and other features will be included within the design.” Without specifying those requirements, it is impossible to determine what deficiencies may exist in those plans, and what impacts those deficiencies might cause. There is also no discussion of what screening will be done in determining the individuals who will be permitted to be students in this “hands-on experience.”
- Also, although it is noted that “normal protocols to prevent cross-contamination between rooms would not be observed,” there is no analysis of the risks posed by this decision.
- E-22 The DEIS states that “Several decontamination and sterilization technologies were initially reviewed and will be studied further: chemical, incineration, rendering, autoclave, and alkaline digestion.” Without a commitment to a particular system or systems, and the degree of redundancy thereof, it is impossible to perform a realistic assessment of potential failure and impacts.

- E-22 The presence of an insectary in a low-containment BSL-2 space, and the plans for research using insects as disease vectors, including genetic research, highlights the potential for a domino effect in the event of cross-contamination with a disease from a higher-containment area, as has happened at the Plum Island facility. The possibility of this eventuality should be explored.

The need for design details is highlighted by the comment that the North American Foot and Mouth Disease Vaccine Bank will be at a positive pressure in relation to the adjacent corridor, which prompts a recommendation for “improved safety controls.” We cannot assess how many other such defects might be present in the ultimate design, since those designs are not presented for our detailed review, as would be “important” to “develop[] . . . the risk assessment,” as noted in the DEIS. Just listing the rooms and facilities is not enough; it matters what rooms are adjacent to each other to analyze potential work flow scenarios and points of structural or procedural risk. For example, the DEIS acknowledges that “proper design of process flows prevents cross-contamination of vital research/diagnostic programs.” See E-35. The DEIS talks about the location of some rooms, but those locations are not shown in any designs.

- E-27 The DEIS fails to indicate any details about the additional BSL-4 space that is contemplated for the vaccine production facility. This additional space necessarily contributes to risk, but is not analyzed. Also, the statement that the vaccine facility would house up to 30-50 liters of disease material appears inconsistent with the statement that the estimated average batch is “assumed to be small, approximately 20L or less” (E-29).

Also, the DEIS itself (at this page and elsewhere throughout this Appendix and the whole) indicates several areas where even the conceptual design requires correction. The EIS must demonstrate actual designs that show the correction of those shortcomings in biosafety and biosecurity.

- E-37 Since “infected animal carcasses will exit via the carcass disposal chute located inside the animal necropsy room,” the DEIS needs to state where the chute leads (including what containment level the receiving space will be) and the mechanism for ultimate disposal of the infected carcasses.

There should not be a “common [air] supply manifold,” to avoid the potential for cross-contamination across BSL levels in the event of pressure imbalances and backfeeds. The “common supply” statement appears to contradict the statement that certain areas “will be served by a dedicated central supply air system.”

The “conceptual ventilation systems” are no more useful in the DEIS than the other conceptual systems, for determining actual site-specific impacts of the proposed facility.

- E-61 Given the tiny size of the FMD virus, there must be an analysis of whether HEPA filters can capture the disease.

Source term analyses in Appendix E must also be conducted for the vaccine production facility.

- E-62 The letters were sent by a disgruntled Ft. Detrick high-containment lab researcher, not a terrorist, as reflected in the recent extensive news coverage.
- E-64,5 Specific criteria need to be established for ductwork, and detailed in the EIS. This is a critical safety issue.
- E-65 No basis is given for the assertion that fire heat is likely to destroy any pathogens released.
- E-66 The assertion that “fire propagation between laboratories is not likely, even with open doors,” is not credible. Indeed, page E-119 states, “The confinement system is essential in preventing a release from the NBAF, thereby maintaining the confinement boundary. Failure of the confinement system to function would be caused by the facility doors (especially exterior doors) not being closed or the ventilation system’s HEPA filters not able to perform their function.”

Fire can take safety systems and containment systems off line within seconds. In an industrial building, fire is even more catastrophic because of the number of complex computer-based and electronic-based systems used within the facility to provide control and safety. When a fire takes place, those systems cannot be relied on to work correctly.

Fire causes cabling in the walls to fail. Almost 100% of control and containment systems, security systems and management systems rely on the cabling that will be within the walls. Fire very easily brings these systems to a halt; thereafter, they are very expensive to repair and get back to normal functions. Indeed, fire breaks down most normally operating systems within minutes. Electrical and communications cable is fragile and will not survive even a small fire, unless plenum or similar cable is used throughout, which is not detailed in the DEIS. A failure in the containment systems can quite literally open the door to a virus release.

Fire also causes people to leave the building and without people monitoring the viruses, control processes and procedures are not followed, leading to a domino effect which is wholly unaccounted for in this analysis.

It is also likely that local fire departments will not know how to work within a BSL-4 laboratory to avoid compromising containment systems. Likewise, they may well lack the equipment necessary to ensure their safety within the NBAF.

- E-68 The DEIS states that “[b]ecause of the lack of design and procedural information on the NBAF, however, fault tree analysis was not performed,” and that “the specific operational activities of the NBAF along with the activities of the population outside of the NBAF place site-specific constraints on the potential consequences associated with the inadvertent or intentional release of pathogens from the facility.” This information

should be included in the FEIS for such analysis to be accurately performed. DHS fails to provide even a baseline listing of activities at PIADC which NBAF is to replace.

- E-69 The reference to reducing the possibility of a laboratory-acquired infection “through the use of effective vaccines” is inappropriate, given the fact that the 8 listed diseases do not have an effective vaccine – hence the putative need for the NBAF.
- E-70 The statement that “[t]he facility is designed to severely limit the potential for possible vector-borne transmission . . .” is not consistent with the lack of actual designs in the DEIS.
- E-79 As noted here, there is “significant topography” on the site. Specifically, the site slopes steeply downhill toward Knap of Reeds Creek, a tributary of Falls Lake, increasing the potential harm from a failure in containment of infectious waste and/or water-borne transmission. This must be reflected in the risk analysis as a whole, and particularly in E.3.4.5.
- E-85 It does not appear that there is any real analysis of the waste systems for handling the infected animal waste. The statement that “none of the effluent water from the wastewater plant will contribute directly to any potable water source” is too obscure. Exactly what path will infected animal waste and carcasses take within the facility, and where exactly will it go once it leaves – to SGWASA? And thence to Knap of Reeds, and thence to Falls Lake? There is also a failure to indicate the containment level(s) in which waste treatment will be housed. If in a lower-containment area, why, given the presence of still-infectious material? Design specifics are vital for this analysis.
- E-87 If maintenance staff will be involved in the treatment of infected animal waste and carcasses, they must be included in the analysis here; likewise, such areas must be considered in the square footage of the analysis, even if they are not in BSL-3, -3Ag or -4 space.
- E-88 Given that elsewhere in the DEIS it is stated that the vaccine production facility will operate 24 hours/day for 365 days/year, it is not valid to assume “a nominal 2,000 hours per year” during which employees will be handling pathogens.
- E-90, 93, 102 Although “the overall accident frequency is estimated for the life of the facility, which is assumed to be on the order of 50 years,” (E-90), it is assumed that “[b]ecause the NBAF is a new facility . . . the packages and equipment in use would be new and degradation would not initially be a significant contributor to the failure probability. Procedures and training would be current, and attention-to-detail is expected to be high. The likelihood of encountering degraded transport packages or process equipment may increase with operating history and could be further enhanced by personnel complacency” (E-93). Further, material will be coming in from other labs that may not have new packaging. It is also assumed that “workers are well trained and equipment is in good working order (easily disinfected, cleaned, etc.),” (E-102). The DEIS elsewhere assumes that “because the facility will be new, the probability of degraded containment

systems (piping, valves, etc.) is relatively low.” (E-113) These assumptions must be corrected; the failure rate for a new facility should not be applied across the 50-year calculations. Also, there is evidence that human error rates are higher at new facilities, when workers are not yet fully familiar with equipment and protocols. This should be taken into account. See *High Containment Biosafety Laboratories: Preliminary Observations on the Oversight of the Proliferation of BSL-3 and BSL-4 Laboratories in the United States*, by the U.S. Government Accountability Office, October 4, 2007.

- E-99 The fact that “there are no documented cases of acquiring [Nipah virus] through a [laboratory-acquired infection]” does not mean the probability of such an event is null, particularly given the facts (1) that there has been very little study of Nipah to date, and (2) that human-to-human transmission has been demonstrated. Likewise, though lab workers may not become infected, they can carry FMD on their clothes or in their nasal passageways.
- E-100 The mitigation number must reflect the demonstrated track record of under-reporting in high-containment labs.
- E-105 There needs to be a separate analysis of the potential of a release of infected insects.
- E-113 The statement that “[b]iological materials exiting the sterilization processes or residing in the solid and liquid waste systems leaving the NBAF are expected to be monitored to ensure that proper disinfection has occurred” is inadequate. The DEIS must detail a process by which, and reflect waste treatment designs so that, each batch of waste is comprehensively tested before it leaves the NBAF to ensure that no infectious material remains viable and that there are no “hot spots.” This is essential as the DEIS acknowledges that “Because of the difficulties and uncertainties associated with effectively monitoring biological wastes, the overall potential of detecting biological materials that were inadequately or incompletely sterilized is relatively low. In addition, the systems necessary to confirm with a high degree of certainty that no viable pathogens exist in the biological wastes is limited by human error, time for analysis, the equipment used to analyze the samples, and the design of the sampling or limited by the quality assurance program, etc.” “The accident sequence of most concern is when there is incomplete or inadequate sterilization. Once this occurs, the likelihood that viable pathogens will be released into the environment is high.” E-113
- E-114 The assumption that “the amount of biological materials that remains in a particular sterilizer batch after an inadequate or incomplete operation is estimated to contain a nominal volume of 10 mL solution containing viable pathogens” is nonsensical. This facility will house up to 1000 pigs, and batches will not be processed in ½ ounce portions. The assumption should reflect a treatment failure for a full batch of waste produced by a significant number of the animals which will be housed there.
- E-120 The DEIS must consider the possibility of a fire originating in places other than a laboratory or BSC, particularly given the large quantities of volatile chemicals which will

be stored at the NBAF for use in cleaning, sterilization and other processes. (See p. E-123.)

No basis is provided for the assumption that “heat from the fire destroys 99% of the available pathogen source term.” That assumption is unrealistic. A fire that originates anywhere but the BSC is more likely to damage containment systems than to eliminate 99% of the pathogens. The same error must be corrected at page E-126.

- E-122 The statement that “the mitigated exposure levels are 100,000 times lower than the unmitigated release” “because of the contribution of the facility structure and its engineered safety barriers in mitigating the initial release” is not valid. The issue here is not whether a fire is unlikely – that is a separate assumption. Once that release occurs, that 100,000 number is irrelevant, because the release has already occurred. Fire suppression systems themselves may contribute additional risk in this facility. The DEIS fails, for example, to consider the situation where fire breaks out, employees evacuate without securing pathogens, sprinkler systems activate, and water from such systems and/or first responders disperses the pathogens in an uncontrolled manner.

Moreover, we have no actual designs for the building, much less the fire suppression systems and any fire-retardance features. The DEIS is inadequate without information detailing such fire-suppression systems. It is thus impossible to evaluate the extent to which building features will or will not impede the spread of a fire. Further, without building designs, we have no benchmark to use to determine whether such systems are later reduced due to budget constraints as the budgeting and construction processes evolve.

The NBAF Feasibility Study states that “The entire building will be provided with complete automatic wet fire suppression in accordance with the requirements of NFPA-13, NFPA-14, and applicable codes. Areas subject to freezing will be provided with complete automatic dry sprinkler systems. Class 1 hose cabinets will be provided on each floor as well as where otherwise required based on IBC and NFPA-14 requirements. Fire protection densities will be determined based on the occupancy and use of the sprinklered area. Where it's determined that there is not sufficient pressure to serve sprinkler demand, a stationary fire pump package will be provided to ensure the required sprinkler performances of the facility. Piping materials will be schedule 40 steel throughout, grooved or threaded malleable iron couplings and fittings. Only cut-groove type or threaded joints for galvanized piping.”

NFPA-14 systems (i.e., wet fire suppression systems) are inadequate for this application. FM-200 based systems (specifically, dry fire suppression systems) or equivalent should be the minimum requirement for a facility with the sensitive and critical mission of the NBAF. Wet fire suppression is cheap, and will pass basic building codes, but can easily destroy the electronic control systems and containment systems that the NBAF will rely on to keep the pathogens contained. A wet system is for supermarkets and Wal-marts, not for a facility such as the NBAF.

Many fire suppression systems can cause major damage to – and even destroy – the very things they are supposed to protect. The NBAF design must seek to avoid damage – not cause it – and to reduce downtime at the NBAF – not lengthen it. The NBAF should have a fire suppression system that deploys quickly and cleanly and won't leave behind oily residue, particulate, or water. FM-200 fire suppressant stops fires fast; wet systems do not. FM-200 systems reach extinguishing levels in 10 seconds or less, stopping ordinary combustible, electrical, and flammable liquid fires before they cause significant damage. That's the fastest fire protection available, period. When fire is extinguished this quickly, it means less damage, lower repair costs, and an extra margin of safety for people. It also means less downtime and disruption of business.

When the NBAF designers consider the potentially devastating environmental effects of an uncontrolled fire, it's easy to see that an FM-200 system or equivalent is a vital part of an environmentally responsible fire suppression solution for the NBAF facility.

- E-123 The statement that a deflagration represents “an improbable event” appears to conflict with the observation of “the potential for flammable or combustible chemicals and natural gas is supplied to be routinely used in the facility.”
- E-129 An earthquake would have a very different accident progression than a hurricane or tornado, with different dispersal mechanisms and consequences. A unitary analysis is not appropriate.
- E-131 The statement that a hurricane or tornado should not occur during the life of the facility (see also p. E-133) is not factually supportable vis-à-vis the Butner site. Indeed, on page E-132 it states that “tornado or hurricane events are a significant potential at the proposed sites and occur with wind speeds in excess of 150 mph. Under those circumstances, the currently proposed NBAF would catastrophically fail if designed to the proposed criteria of 119 mph.” North Carolina ranks third in the nation in hurricane strikes (see <http://www.erh.noaa.gov/mhx/2007NCHurricaneGuide.pdf>), and experienced the following hurricanes of more than 119 mph in the past 20 years: Andrew (1992); Fran (1996); Floyd (1999); Isabel (2003); Charley (2004). Further, the tornado strikes to the area, such as those referenced at page 3-80, must be accounted for in this section.
- E-135 The assumption that exposure generated by a release in a hurricane would be by aerosol is too narrow. A breach in containment could lead to the release of infected animals or insects, or to spills of infectious material being swept into adjacent waterways.
- E-142 The DEIS fails to analyze disposal methods for the “radioactive materials within the facility.” Nor does it detail the potential environmental impacts associated with such materials.
- E-143 The DEIS fails to take into account the fact that the Butner site is within the landing path for Raleigh-Durham Airport, leading to an increased risk of an aircraft crash accident. Nor does it take into account the larger size of the airplanes that serve this major airport. (The DEIS considered only the aircraft “of the size and configuration as those that

commonly take off and land at smaller airports in the vicinity of the proposed NBAF sites.”) The Manhattan, Kansas airport is not comparable. See E-145.

E-150 The DEIS contains no design details to evaluate the claim that “preventative features” will provide effective containment in the event of an aircraft crash.

E-160 The statement that “significant releases of pathogens from the NBAF as a result of accidents could be expected to occur only from the higher containment areas” is not valid, given that the waste treatment system is to be placed in only BSL-2 containment.

Sincerely,

/s/

Kathryn C. Spann
Steering Committee Member
on behalf of the
Granville Non-Violent Action Team
4720 Bahama Road
Rougemont, North Carolina 27572
919.477.5653