

**One-Page Synopsis**  
**Statement of Bruce Knight on National Bio- and Agro-Defense Facility**  
**May 22, 2008**

- Agriculture is vital to the U.S. economy. We expect record exports of \$101 billion this year along with increasing imports that have already risen from \$58 billion in 2005 to an estimated \$76.5 billion this year.
- As goods move back and forth across the border, we must remain vigilant to safeguard U.S. agriculture from unwelcome pest and disease threats. Intentionally or unintentionally contaminated products could quickly spread a pest, disease, or other agent that could not only devastate our agricultural industry but also cause numerous casualties.
- To guard against new diseases and potential bioterrorist releases, the U.S. Department of Agriculture (USDA) must continually conduct research and diagnostics to better understand these pathogens. We recognized, even before the Department of Homeland Security (DHS) was created, that there was a need for additional space and upgraded biosecurity measures to work on foreign and emerging animal diseases. The current research facility located on Plum Island is aging, inadequate, and outdated.
- In response to Presidential Homeland Security Directive 9, USDA is working closely with DHS to develop the National Bio- and Agro-Defense Facility (NBAF) to replace The Plum Island Animal Disease Center (PIADC), after a construction and transition period of 7-10 years. NBAF would provide the facility we need to carry out BSL-4 activities not currently possible at PIADC, such as addressing diseases like Nipah and Hendra, as well as Rift Valley Fever (which requires vaccinated personnel; however vaccine is in short supply).
- Since the Plum Island facility was transferred to DHS in 2003, we've developed a strong, collaborative partnership with DHS that enables both Departments to achieve our similar goals while making the most of each other's specialized expertise.
- More than 50 years ago, the Plum Island facility was built on an island to create physical separation from susceptible livestock. Today, with more advanced technologies, including redundancies and the latest biosecurity and containment systems, coupled with employee training and monitoring, NBAF could safely operate on the mainland.
- A mainland site would be less expensive to operate, more easily accessible than an island location, better enable quick response to potential disease threats, and offer the opportunity for innovative collaboration if located near an established research community.
- A 2002 study completed by the Science Applications International Corporation and commissioned by USDA concluded that there was a valid USDA need for a BSL-4 facility, and that a BSL-4 facility for large animal work could be safely located on the mainland.
- Although DHS is ultimately responsible for the selection of a NBAF site, USDA has been closely involved throughout this process. We support the criteria used to select the sites and look forward to the next steps in the process.

- DHS is currently preparing an environmental impact statement (EIS) for the six site alternatives, including Plum Island and mainland locations. We need to move forward in a timely manner with NBAF to develop the diagnostics and tools needed to protect U.S. agriculture from the threats of dangerous foreign animal diseases.
- The Administration included in our Farm Bill Proposal an authorization for USDA to conduct research and diagnostics for highly infectious disease agents on the U.S. mainland. We recognize DHS' interest in the Secretary being directed, via statute, to issue a permit for live foot-and-mouth disease virus at the NBAF. We believe this direction will provide clarity as DHS moves forward in selecting a site and constructing the NBAF.

**Statement of Bruce Knight**  
**Under Secretary**  
**Marketing and Regulatory Programs**  
**Department of Agriculture**  
**Before the**  
**Subcommittee on Oversight and Investigations**  
**House Energy and Commerce Committee**  
**May 22, 2008**

Good afternoon. I am Bruce Knight, Under Secretary for Marketing and Regulatory Programs at the U.S. Department of Agriculture (USDA). Thank you for the opportunity to appear before the Committee today to present the Department's views on the establishment of the National Bio- and Agro-Defense Facility (NBAF). Today, the Committee raises a timely and important issue –agriculture security– that we at USDA consider essential to our mission, which is to provide leadership on food, agriculture, natural resources, and related issues based on sound public policy, the best available science, and efficient management.

Agriculture is a vital component of our nation's economy. Of particular importance to homeland security is the significant increase in agricultural trade. This year, we expect agriculture exports to reach approximately \$101 billion, making it the highest export sales year ever in our history – and significant to our balance of trade. Agriculture imports are rising as well—increasing from nearly \$58 billion in 2005 to an estimated \$76.5 billion this year.

We face many challenges in protecting this important infrastructure. As goods move back and forth across the border, we must remain vigilant to safeguard U.S. agriculture from unwelcome pest and disease threats. Our sector is particularly concerned about security because food production is not constrained by political boundaries, and as we all know, diseases and pathogens do not respect state or national borders. The interconnected nature of the global food system is our strength and allows us to feed the world, but it is also a disadvantage in the event of attack or natural disease outbreak. Additionally, one of the agricultural sector's greatest contributions to the quality of life is the fact that products flow quickly through interstate commerce – one of our greatest assets is also one of our greatest concerns because intentionally or unintentionally contaminated products could quickly spread a pest, disease, or other agent.

USDA works diligently to protect U.S. agriculture from the potential introduction of human and animal disease agents, whether unintentionally or through agroterrorism. Many of these pathogens such as the Nipah and Hendra viruses are zoonotic, that is, they cause both human and animal disease, and can pass from animals to humans. If a significant zoonotic or animal disease were to penetrate our borders, it could devastate the agricultural industry, cause numerous casualties, and harm the economy.

We've seen just how disastrous the effects of a foreign animal disease outbreak can be in the 2001 foot-and-mouth disease (FMD) outbreak in the United Kingdom. In that case, over 6 million pigs, sheep, and cattle were destroyed, with the epidemic costing the U.K. economy an estimated \$13 billion. This example highlights the need for the best tools

and diagnostics to safeguard the U.S. livestock industry from significant foreign animal disease threats such as FMD. At the same time, the 2007 suspected release of live FMD virus from the Pirbright campus in England amplifies the balance needed in undertaking such work. This is why USDA and the Department of Homeland Security (DHS) will use the most modern biosafety practices and procedures, and stringent and rigorous safety measures within NBAF.

Because of the continued emergence of new animal diseases, the leaping of dangerous animal diseases across species, and the possibility of a bioterrorist release, it is even more essential that USDA have a sufficient understanding of these diseases and be well prepared to protect the U.S. livestock industry from their damage. To achieve this, USDA works through its Agricultural Research Service (ARS) and Animal and Plant Health Inspection Service (APHIS) to meet its responsibilities in animal health. ARS is the primary intramural science research agency of USDA, operating a network of over 100 research laboratories across the nation that work on all aspects of agricultural science. APHIS is responsible for safeguarding U.S. agricultural health from foreign pests and diseases of plants and animals.

In order to be able to rapidly identify, respond to, and control outbreaks of foreign animal and zoonotic disease, USDA needs secure, state-of-the-art biocontainment laboratories with adequate space for advanced research, diagnostics, and training. Recognizing this need, the President directed USDA and DHS, via Homeland Security Presidential Directive 9: “Defense of the United States Agriculture and Food,” to develop a plan to

provide for such facilities. As I will explain further, USDA is working closely with our partners in DHS to fulfill this important need.

### Plum Island Animal Disease Center

In 1954, USDA began work at the Plum Island Animal Disease Center (PIADC) in research and diagnostics on foreign animal diseases that, either by accidental or deliberate introduction to the United States, pose significant health and/or economic risks to the U.S. livestock industry. The Plum Island Animal Disease Center has served U.S. agriculture well. It's no accident that this country has the healthiest and most abundant livestock populations in the world. Producers and all of us at USDA work hard every day to keep this up.

An integral part of maintaining animal health is preventing the entry of exotic pest and disease threats. The Plum Island Animal Disease Center, through its diagnostic, research, and reagent production and distribution activities, has stood as American agriculture's bulwark against potentially devastating foreign animal diseases. Each working day since the facility opened over 50 years ago, the dedicated and highly skilled Plum Island Animal Disease Center staff has equipped veterinarians, scientists, professors, and other animal health professionals here and around the world with the tools they need to fight exotic disease incursions that threaten livestock. In addition to FMD and classical swine fever, other livestock diseases that our scientists have studied at the Plum Island Animal Disease Center include African swine fever, rinderpest, Rift Valley fever, West Nile fever, vesicular stomatitis, and Capri pox (sheep pox and lumpy skin disease).

As you know, in June 2003, operational responsibility for the Plum Island Animal Disease Center transferred from USDA to DHS under the Homeland Security Act of 2002. Since the transfer, we've developed a strong, collaborative partnership with DHS and put in place an interagency agreement to clarify roles and responsibilities. A Board of Directors and Senior Leadership Group were created to facilitate decision-making regarding facility operations and policies, while also allowing the three agencies to focus on accomplishing their specific missions and goals. I believe our relationship with DHS is a very positive one that allows both Departments to achieve our similar goals while making the most of each other's specialized expertise.

After the Plum Island Animal Disease Center transfer, USDA remained responsible for conducting basic and applied research and diagnostic activities at the Plum Island Animal Disease Center to protect U.S. agriculture from foreign animal disease agents. DHS, in turn, assumed responsibility for coordinating the overall national effort to protect key U.S. resources and infrastructure, including agriculture. Science programs at the Plum Island Animal Disease Center now include the APHIS Foreign Animal Disease Diagnostic Laboratory (FADDL), ARS' Foreign Animal Disease Research Unit, and DHS' Targeted Advanced Development Unit.

APHIS' work at the FADDL aims to protect the U.S. agricultural system by providing the capabilities for early detection and diagnosis of foreign animal diseases. The FADDL is also the custodian of the North American FMD Vaccine Bank (owned by Canada,

Mexico and the United States), which stores concentrated FMD antigen that can be formulated into a vaccine if a FMD introduction occurs. As such, FADDL employees are responsible for performing safety testing of new antigen lots and periodically testing the quality of stored antigen.

APHIS scientists perform diagnostic testing of samples collected from U.S. livestock that are showing clinical signs consistent with an exotic disease, as well as testing animal products and live animals being imported into the United States to ensure that unwanted diseases are not accidentally introduced through importation. APHIS scientists at the Plum Island Animal Disease Center have the capability to diagnose more than 30 exotic animal diseases, and perform thousands of diagnostic tests each year. They also prepare diagnostic reagents and distribute them to laboratories throughout the world, and test the safety and efficacy of vaccines for selected foreign animal diseases. Other APHIS activities include improving techniques for the diagnosis or control of foreign animal diseases and validating tests for foreign animal diseases that are deployed to the National Animal Health Laboratory Network (NAHLN). Through the use of these tests in surveillance, the NAHLN provides for early detection and the surge capability needed in the case of an outbreak.

In addition, FADDL staff, in conjunction with APHIS' Professional Development Staff, train veterinarians, scientists, professors, and veterinary students on recognition of clinical signs and pathological changes caused by foreign animal diseases. This training provides the backbone of APHIS' animal disease surveillance and safeguarding

programs. These foreign animal disease diagnosticians trained by FADDL are located throughout the country, and can be on-site to conduct an investigation and collect samples within 16 hours of receiving a report of a suspect foreign animal disease. Based on their assessment of the situation and prioritization of the threat, APHIS can then take appropriate steps if necessary to protect the U.S. livestock industry.

Through its involvement in the Plum Island Animal Disease Center, ARS develops new strategies to prevent and control foreign or emerging animal disease epidemics through a better understanding of the nature of infectious organisms, pathogenesis in susceptible animals, host immune responses, and the development of novel vaccines and diagnostic tests. The ARS Foreign Animal Disease Research Unit focuses on developing vaccines that can be produced safely in the United States and used safely on U.S. farms, diagnostic techniques to differentiate between a vaccinated and an infected animal, and methods for identifying carrier animals. Currently, ARS' work at the Plum Island Animal Disease Center includes active research programs working with FMD, Classical Swine Fever, and vesicular stomatitis viruses.

ARS scientists have recently carried out extensive work on FMD, including early development of a FMD vaccine that is safe to produce on the mainland; discovery of an antiviral treatment that prevents FMD replication and spread within 24 hours; and determination of many key aspects of FMD virus structure, function, and replication at the molecular level, leading to highly specific diagnostic tests.

## Meeting the Needs of American Agriculture

The Plum Island Animal Disease Center has played a critical role in developing the tools and expertise needed to protect the country from the deliberate or unintentional introduction of significant foreign animal diseases. However, much has changed since the Plum Island Animal Disease Center was first built, and we are even more cognizant of the threat from foreign animal diseases due to the increasingly interconnected world we live in. This need is echoed by our American livestock industries that could be devastated by the introduction of a significant foreign animal disease. Groups such as the United States Animal Health Association and National Institute for Animal Agriculture have appealed for accelerated research to protect their industries. Also, the National Cattlemen's Beef Association, Animal Agriculture Coalition, and National Milk Producers Federation have written to Congress, to show their support for NBAF.

To continue providing U.S. agriculture with the latest research and technological services, as well as world-class approaches to agricultural health safeguarding and foreign-animal disease diagnostics, USDA needs additional space and upgraded biosecurity measures to work on those animal-borne diseases that pose the greatest risk to U.S. livestock industries, and those that can also be transmitted to humans. The Plum Island Animal Disease Center is aging and nearing the end of its lifecycle, and the state of current facilities has created a backlog of needed space for important experiments, diagnostic development, and training efforts.

In particular, USDA is in need of enhanced research and diagnostic capabilities for animal diseases, particularly zoonotic diseases of large animals that require agriculture BSL-3 and BSL-4 capabilities. However, since we cannot currently carry out BSL-4 activities at the Plum Island Animal Disease Center, the Nation is left lacking a large animal facility to address high-consequence animal diseases that can be transmitted to humans, such as Nipah and Hendra, as well as Rift Valley Fever (which requires vaccinated personnel; however vaccine is in short supply).

Specifically, USDA would utilize the BSL-4 space to develop diagnostic assays for Rift Valley Fever and Nipah and Hendra viruses, using specimens collected from animals in the BSL-4 lab. In addition, in the event of an emerging pathogen, it would often be necessary to inoculate animals in a BSL-4 suite in order to determine the clinical course of the disease, determine appropriate diagnostic specimens, isolate the agent, and develop diagnostic tools.

In order to protect U.S. agriculture and human health, it is critical that USDA have the capability of diagnosing and working with the disease agents I have mentioned, as well as any new highly infectious pathogen that may emerge. In response, our agencies have begun planning for the next generation facility which we call the NBAF, to replace the current structures at the Plum Island Animal Disease Center. NBAF will integrate research, development, and testing in foreign animal diseases and zoonotic diseases, which will support the complimentary missions of USDA and DHS. NBAF will address USDA needs that are currently not being met by the facilities at the Plum Island Animal

Disease Center, including inadequate lab space for processing diagnostic samples, limitations in diagnostic capability for BSL-4 agents, and lack of space to expand to include the development, feasibility testing, and validation of new and emerging technologies for detection of exotic and emerging diseases. In addition, it will provide room to grow as we further enhance our abilities to respond to increasing threats to the U.S. livestock industry.

The NBAF will also have a synergistic effect, to the benefit of each of our agencies, by utilizing the expertise of the academic and scientific community in the area. In addition, we expect that by sharing a well-equipped core facility, we will see a more cost effective utilization of funding. This will also continue to provide a number of opportunities for enhanced interaction among the three agencies. For example, research done by ARS and DHS may identify possible new diagnostic tools that APHIS can use; APHIS' repository of foreign animal disease agents obtained from outbreaks around the world will provide a resource for ARS and DHS research and bioforensics; and APHIS' diagnostic investigations and surveillance will help identify emerging or re-emerging diseases in the field, in turn helping set research priorities for ARS and DHS.

### Site Selection

At the time Plum Island was built, biosecurity was much different than it is today. Agriculture biosecurity was defined by biological isolation, so that if there was a problem at the laboratory, there was physical separation from susceptible livestock populations and any breaches were localized. Today, with much more advanced technologies, the

ability to manage effective biosecurity and biosafety practices is not dictated by location or physical barriers.

We recognize that there is concern about building the NBAF on the mainland. Since the determination was made over 60 years ago to build the Plum Island Animal Disease Center on an island, assessments have shown that technological advances would allow for safe research and diagnostics of foreign animal diseases to take place on the U.S. mainland. A 2002 study completed by the Science Applications International Corporation (SAIC) and commissioned by USDA found that the FMD virus and other exotic foreign animal diseases of concern to the Department could be fully and safely contained within a BSL-3 laboratory, as was being done in other countries at the time including Canada, Germany, and Brazil. A second SAIC study also concluded that there was a valid USDA need for a BSL-4 facility, and that a BSL-4 facility for large animal work could be safely located on the mainland.

In planning for the NBAF, we recognize the absolutely essential need for state-of-the-art biosafety practices and procedures, including stringent and rigorous safety measures within the laboratories themselves, to prevent disease organisms from escaping into the environment. Situations such as the recent suspected release of live FMD virus from the Pirbright campus in England only serve to highlight this importance. We can use that example as a learning opportunity and make sure that the design and maintenance of the NBAF facility enables us to carry out the essential activities needed to protect the Nation from foreign animal diseases while ensuring the highest level of biosafety.

This is why the NBAF will utilize the redundancies built into modern research laboratory designs and the latest biosecurity and containment systems, coupled with continued training and monitoring of employees, to effectively minimize any risks. Personnel controls for the NBAF will include background checks, biometric testing for lab entry, and no solitary access to BSL-4 microorganisms. The NBAF will also feature biological safety cabinets in the wet labs designed to meet the needs of BSL-3 labs, while in BSL-4 labs, these biological safety cabinets will include additional security measures or be used in combination with full-body, air-supplied personal protective suits.

In terms of facility design, the BSL-4 lab at the NBAF will employ a box-in-box principle with a pressure-controlled buffer. All water and air leaving the lab will be purified—that is, no research microorganism will enter the sewage system or outside air. All critical functions will have redundant systems. The design of the BSL-4 laboratories and animal space will comply with the appropriate recommendations and requirements of the Centers for Disease Control and Prevention, National Institutes of Health, Department of Defense, and National Research Council.

I would also like to note some potential advantages to locating the NBAF on the mainland. For example, the lower cost of living, as compared to that in the communities surrounding the Plum Island Animal Disease Center, would likely make recruiting personnel easier for our agencies. This would also eliminate the costs of moving people on and off an island every day, as we currently do. A mainland facility would be more

accessible if air traffic is shut down due to weather conditions or an emergency situation, and would not be subject to the occasional wind closures that we experience at the Plum Island Animal Disease Center due to rough waters. And, as I mentioned earlier, locating the facility near an established research community would facilitate innovative collaboration.

A key advantage to locating NBAF on the mainland would be the ability to quickly respond to a potential foreign animal disease threat. Placing the NBAF on the mainland could eliminate the need for additional transport of samples to the island via boat or aircraft, as is currently done at Plum Island. Having a more accessible location, where diagnostic capabilities could be utilized within the first 24 hours of an emergency, is essential. For example, in June 2007, APHIS conducted an investigation into swine showing signs consistent with a significant foreign animal disease. In such a situation, every hour counts when it comes to being able to quickly rule out major diseases. Incidents such as this can have a significant impact on the economy, stop movement and trade in multiple species of livestock, and spread fear throughout the industry.

Although DHS is ultimately responsible for the selection of a NBAF site, USDA has been closely involved throughout this process. APHIS and ARS have provided detailed program requirements to DHS, and have representatives on the site selection committee and site inspection team. We support the criteria used to select the sites: proximity to research capabilities linked to the NBAF mission requirements, site proximity to a skilled

workforce, as well as acquisition/construction/operations, and community acceptance, and look forward to the next steps in the process.

DHS is currently preparing an environmental impact statement (EIS) looking at the six sites, which include Plum Island and five mainland locations. The EIS, on which USDA and DHS are working, will consider the risk and potential consequences of an accidental release of a foreign animal disease, and will be integral to moving forward with a sound NBAF site selection.

It is important that we move forward in a timely manner with planning and construction of NBAF so that we can develop the diagnostics and tools needed to protect U.S. agriculture from the threats of dangerous foreign animal diseases. Just as the science behind bioterrorism has advanced in recent years, and new and changing diseases continue to emerge, so too must we arm ourselves with more sophisticated ways of preventing harm to the U.S. livestock industry. If we don't, then bioterrorists will continue to find innovative ways to attack our livestock, new diseases will continue to emerge, and U.S. agriculture will be left vulnerable to these dangers. This is why USDA is committed to working with DHS to move forward with plans for NBAF, after a thorough analysis of the options and development of plans to ensure the utmost biosafety and biosecurity.

#### Authority to Conduct FMD Research on the Mainland

Lastly, I would like to briefly mention recent legislative activity related to live FMD virus. Current statute (21 U.S.C. 113a.) restricts research involving live FMD virus and other animal diseases that present a significant risk to domestic U.S. livestock to laboratories on coastal islands separated from the mainland United States by deep water. Research involving live FMD virus is carried out at the Plum Island Animal Disease Center under this statute, which dates back to the 1950s. The statute was amended by the 1990 Farm Bill to authorize the Secretary of Agriculture, when necessary, to allow the movement of live FMD virus, under permit, to research facilities on the U.S. mainland.

USDA recognizes DHS' interest in the Secretary being directed, via statute, to issue a permit for live FMD virus at the NBAF. This direction will provide clarity in this important area as DHS moves forward in selecting a site for the NBAF and then in contracting for the construction of the facility. For these reasons, the Administration included in our Farm Bill Proposal an authorization for USDA to conduct research and diagnostics for highly infectious disease agents, such as FMD and rinderpest, on the U.S. mainland. Consistent with the Administration's proposal, section 7524 of the Food, Conservation, and Energy Act of 2008 directs the Secretary to issue a permit for live FMD virus at NBAF, while preserving the Secretary's discretion and ensuring that all biosafety and select agent requirements are being met at the facility.

### Conclusion

Thank you again for the opportunity to discuss this important issue with the Committee today. We believe the planned NBAF is necessary to replace the aging Plum Island

Animal Disease Center and provide additional capacity for much needed animal disease research, diagnostics, training, and countermeasures development. The NBAF will play a crucial role in protecting against the future introduction of foreign animal and zoonotic diseases, and ensuring the continued health and vitality of our agricultural industries. We are committed to continuing our work in partnership with DHS in planning the NBAF and making the facility a reality.

## **Bruce Knight, Under Secretary for Marketing and Regulatory Programs**

Bruce Knight is Under Secretary for Marketing and Regulatory Programs. Confirmed by the Senate on August 6, 2006, Mr. Knight provides leadership and oversight for the Animal and Plant Health Inspection Service, the Agricultural Marketing Service and the Grain Inspection, Packers, and Stockyards Administration.



These agencies protect animals and plants and promote fair, open and orderly markets for U.S. agricultural products. Safeguarding America's flocks, fields and forests from pests and diseases is worth billions of dollars in losses avoided by American farmers and ranchers. Standardization, grading and marketing efforts along with efficient transportation systems increase the efficiency of agriculture and provide better quality products to consumers at reasonable cost.

From 2002 to 2006, Mr. Knight served as Chief of the Natural Resources Conservation Service, the lead agency for conservation on private working agricultural lands. Under Mr. Knight's leadership, the agency assisted 1 million farmers and ranchers in applying conservation on more than 130 million acres of working farm and rangelands. He takes a common sense approach to management that emphasizes transparency, accountability and frugality. That means serving customers effectively, maximizing tax dollars and getting visible results.

A third-generation rancher and farmer and lifelong conservationist, Mr. Knight grew up on a small farm near Gann Valley, S.D., where he owns a diversified grain and cattle operation using no-till and rest rotation grazing systems. His ranching background gave him the opportunity to practice stewardship and husbandry and provided firsthand knowledge of the interdependency of animal, plant and human health.

Mr. Knight came to the U.S. Department of Agriculture after many years helping develop our nation's agricultural policies and programs, both as a congressional staff member and on behalf of major agricultural producer groups. He served on the staff of Senate Majority Leader Bob Dole, Kan., focusing on development of the conservation title of the 1996 farm bill. He also was a legislative assistant to Rep. Fred Grandy, Iowa, and Sen. James Abdnor, S.D. Mr. Knight served as vice president for public policy for the National Corn Growers Association and also worked for the National Association of Wheat Growers.

He attended South Dakota State University. Mr. Knight is married and has two children. He attends Vienna, VA, Presbyterian Church, and is an avid sportsman.