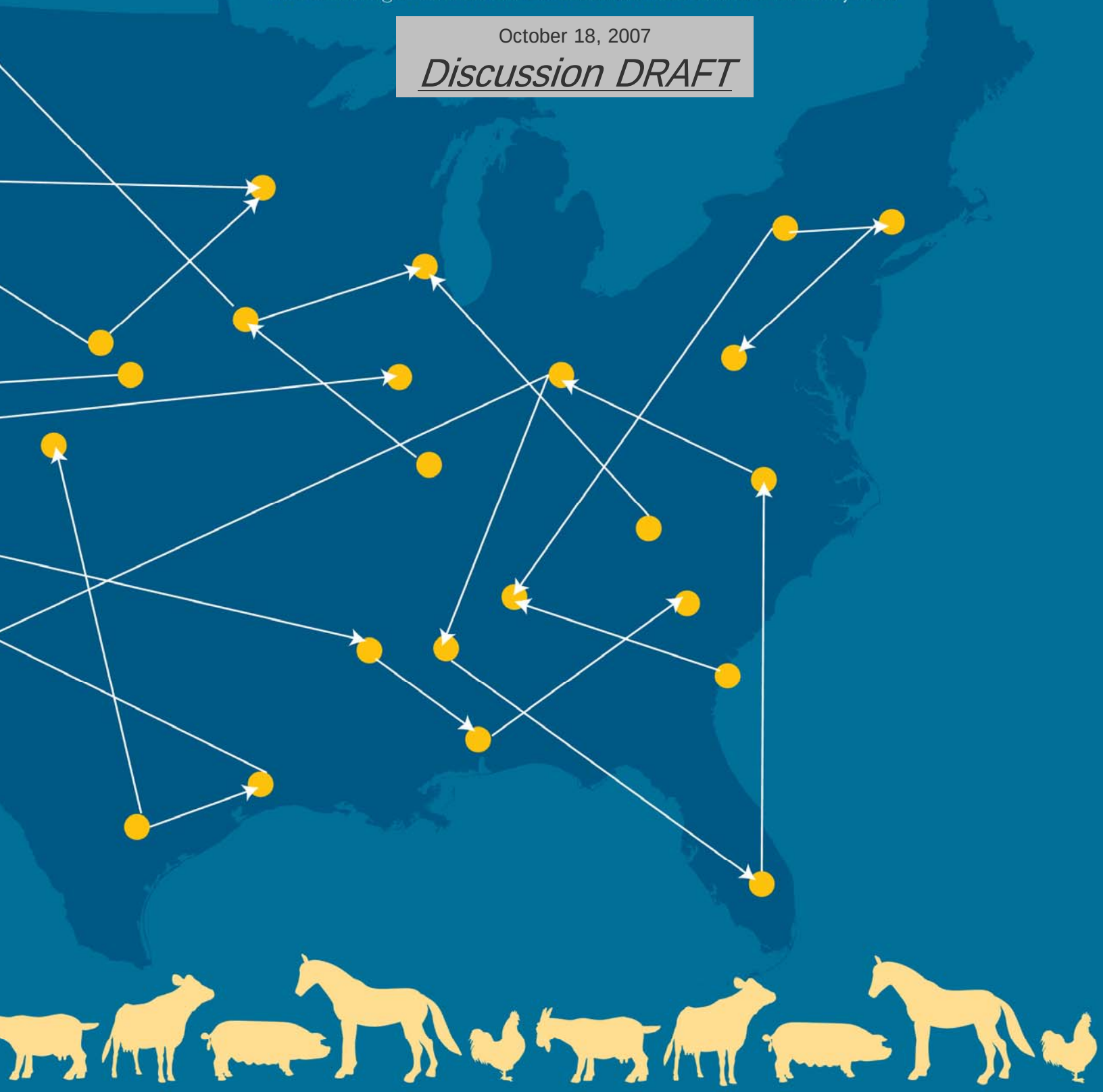
A Business Plan to Advance Animal Disease Traceability

Through the Harmonization of State, Federal, and Industry Programs and Convergence with the National Animal Identification System

October 18, 2007

Discussion DRAFT



United States Department of Agriculture
Animal and Plant Health Inspection Service

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Executive Summary

The ability to successfully trace an animal disease to its source is critical to the health and economic well-being of commercial livestock and poultry industries in the United States. Animal health officials require accurate and complete information to respond effectively to animal disease events and to successfully conduct disease surveillance programs. Rapid response minimizes the potential spread of contagious diseases, and lessens the detrimental effects of disease events. Our emergency response capabilities can be improved through greater standardization of the data elements needed for animal disease control programs, as well as increased premises registration and animal identification.

Key Objectives

This report identifies significant opportunities and strategies for advancing the U.S. animal disease traceability infrastructure. Improvements will result from strategies that support the:

- Utilization of national standards in disease programs to increase the compatibility of information systems,
- Incorporation of national standards in producer-industry programs, and;
- Integration of technologies to improve efficiency and accuracy of data collection.

USDA defines retrieval of traceback data within a 48-hour window as optimal for efficient, effective disease containment. Within this timeframe, animal health officials must have the data required to trace a disease back to its source and limit potential harm to animal agriculture, such as loss of producer income. The sooner reliable data is available, the sooner affected animals can be located, appropriate response measures can be established, and disease spread can be halted.

The National Animal Identification System (NAIS), developed in partnership with State animal health authorities, the animal agriculture production industry, and USDA, provides the common data standards required to close traceability gaps. Although the optimal 48-hour window remains the vision of NAIS and its long-term goal, the industry can make immediate progress towards meeting the needs of animal health officials, in addition to maintaining the confidence of consumers and trading partners.

The strategies discussed in this report support progress to the long-term goal of 48-hour traceback with continued focus on increasing the number of premises registered and now, initiating efforts to increase the number of animals identified to the premises of origin. USDA is prioritizing their efforts by species/sectors where increase in traceability infrastructure can have the greatest return on investment. Traceability objectives, action timelines and participation benchmarks are provided for the priority species.

Collaboration between USDA, State animal health authorities, and the animal agriculture production industry remains the catalyst for continued traceability progress. Our collaborators will be crucial to the success of the actions identified in this plan, as well as future strategies—including more detailed actions related to the collection of data on animal movements—as we progress toward our long-term goal. Industry organizations and the NAIS Species Working Groups and Subcommittee will take an active role in the review of these strategies and provide feedback and additional recommendations as we move forward to advance animal disease traceability.

This report defines the following strategies to advance animal disease traceability in the United States:

Strategy 1: Prioritize Species/Sectors

The establishment of priorities among species and sectors within species industries will ensure resources are applied where improvement in traceability is needed the most. This business plan first categorizes species based on existing tracing capabilities and the need for improvement. Tier 1 species include the primary commercial food animal industries – cattle, poultry (chickens and turkeys), swine, sheep, and goats. The competition horse industry is included as Tier 1due in part to frequent animal movement. All other livestock and poultry are Tier 2 and will have traceability strategies defined at a later date. Additionally, sectors within the Tier 1 species have been prioritized to direct additional emphasis; for example, the beef and dairy breeding herds are the highest priorities within the cattle sector.

Strategy 2: Harmonize Animal Identification Systems

The need for standardized animal identification in government and industry programs is more evident now than ever before. Some disease control programs that are winding down, brucellosis for example, required a high level of identification and traceability. In fact, there are numerous disease control programs that require and/or benefit from official animal identification. The standardization of animal identification and data collection in these existing systems presents a clear opportunity to enhance traceability. In the private sector, producers are seeking improved and flexible identification methods, and compatible processes and data standards that may be used for multiple purposes. The harmonization of animal identification systems will undoubtedly result in more cost-effective options benefiting producers while achieving increased animal disease traceability for the entire industry.

Strategy 3: Converge NAIS Data Standards in Disease Programs and Regulations

USDA will take steps to adopt and apply NAIS data standards in existing disease programs, including international/interstate commerce regulations. For example, establishing national data standards that identify premises importing and exporting livestock, locations participating in official disease control programs, and origin and destination premises listed on Interstate Certificates of Veterinary Inspection (ICVI) will greatly enhance animal disease tracing and emergency response capabilities.

Strategy 4: Integrate Automated Data Capture Technologies with Disease Programs

USDA will take steps to integrate electronic data capture and reporting technologies into existing disease programs. By using NAIS-compliant radio frequency identification (RFID) devices and integrating handheld computers/readers to replace paper-based forms, animal health officials will be able to electronically record and submit essential data to the USDA Animal Health and Surveillance Monitoring database and other appropriate animal health databases. The electronic collection of data will increase volume and quality, minimize data errors, and speed data entry into a searchable database.

Strategy 5: Partner with States, Tribes and Territories

State animal health authorities play a critical role in advancing national animal disease traceability. Working in close partnership with State, Tribal and Territorial officials, USDA will continue to support the advancement of each State's disease traceability infrastructure. Each State Animal Health Officials will administer and manage localized plans reflecting the animal health priorities in individual regions.

Strategy 6: Collaborate with Industry

Achieving traceability objectives requires a partnership between the production sector and animal health officials. Producer organizations, representing member interests, can accelerate the adoption of practices that advance traceability. USDA has entered into cooperative agreements with non-profit industry organizations to promote premises registration within various species groups. Collaboration with USDA accredited veterinarians will enable the delivery of accurate information to clients as well as enhancing the adoption of NAIS data standards in everyday production management systems and disease program activities at the producer level. Additional partnership efforts with industry alliances, service providers, auction markets, feedlots, harvesting facilities, and other industry sectors are a priority for USDA.

Strategy 7: Advance Identification Technologies

Continued advancements in traceability require practical, affordable technology solutions that improve efficiency and accuracy of animal ID data collection. USDA will collaborate with stakeholders to establish performance standards for ID devices and evaluate emerging technologies with emphasis on systems that can operate at the "speed of commerce."

Outcomes and Timelines

Significant progress will result from the planned strategies and actions detailed in this business plan. As noted previously, because the need to advance traceability differs among the various species and sectors, it is important for USDA to establish clear priorities as we proceed with NAIS. Targeted timelines for the key strategies and actions are summarized on Section 5 to guide the implementation of these priorities.

At this time, the cattle industry has the greatest need to advance traceability, due, in part, to its size and diversification. These challenges require more resources and time to achieve optimum tracing capability for the cattle industry. Success of the plan is then determined by the level of traceability improvement, and for the cattle industry is defined as achieving 70 percent of the cattle breeding herd identified to their birth premises by January 2009. Other species traceability objectives are defined in this section.

Conclusion

Opportunities to advance traceability will continue to evolve as these strategies are successfully implemented. Additionally, industries will face new animal health demands as the animal agriculture industry changes. Therefore, the strategies will continue to be evaluated and adjusted to ensure that we continue to advance towards the optimum goal of a 48-hour traceback as timely and efficiently as possible.

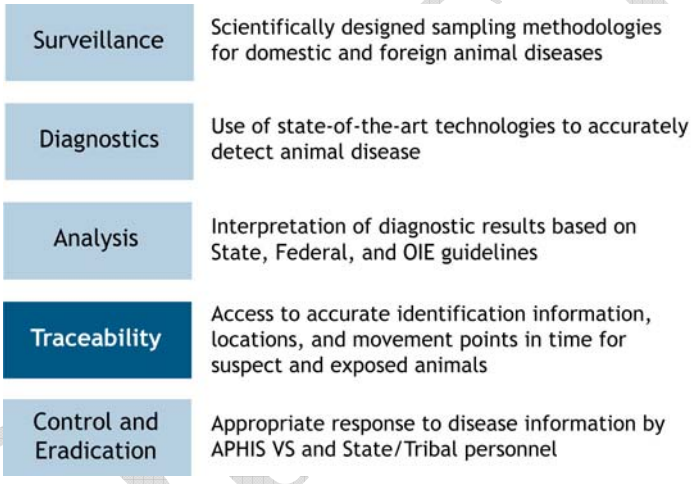
Background: Traceability and Key Resources

Introduction

In the field of animal health traceability is defined as the ability to document all relevant elements—movements, processes, and controls—needed to determine the life history of an animal This is accomplished by uniquely identifying animals, either individually or by group/lot, and recording their movements within the production chain. The main goal of an animal traceback system is to provide information regarding the source and extent of disease infection—which is key to protecting U.S. animal health and marketability.

The Role of Traceability in Disease Control Programs

Disease control programs depend on the successful implementation of each step in the chart below. Traceability is an essential component of any disease control effort.



For many years, animal identification and traceability have played a critical role in USDA animal health programs—from vaccination eartags within the brucellosis eradication program, to the use of approved identification devices within the national scrapie and tuberculosis eradication programs. Animal identification and traceability are key to managing disease outbreaks; monitoring official vaccination programs; documenting affected and unaffected regions of a country or State for zoning and compartmentalization necessary for maintaining trade; providing timely animal movement information when needed; and establishing effective animal health inspection and certification programs.

In most cases, animal health officials have used animal identification and traceback within programs in response to existing or threatening outbreaks of specific diseases. Successful examples of this approach include the Cooperative State/Federal Brucellosis Eradication Program (cattle), the Pseudorabies Eradication Program (swine), and the National Scrapie Eradication Program (sheep/goats). Disease surveillance, eradication, and control programs such as these have achieved significant success over the years in reducing animal disease in the United States.

The Current Challenge

This success, however, has led to a paradox in the field of animal health. As diseases have been eliminated, participation in active disease programs has lapsed—causing the traceability infrastructure in our country to be less effective than it once was. In the past, when livestock diseases (i.e., brucellosis, tuberculosis) were widespread, cattle herds and other animals were commonly tested and vaccinated. The animals were officially identified as part of this process, and their movements were recorded in government systems. As a result, the cattle industry had a high level of traceability.

Prior to NAIS

When a herd was tested for brucellosis, the event was recorded in the brucellosis section of the "Generic Database." The data entry clerk, before entering the data, first searches for the herd to determine if it has already been entered into the system. If the herd cannot be found, a new record for that herd is created that includes all the contact information and descriptive data that is needed. The problem is that the Generic Database does not have a built-in mechanism to prevent more than one herd record to be created for a single location. Thus, if the clerk does not do a thorough and exhaustive search, duplicate records may exist.

As another example, the Smith Farm (purely fictitious) located at 123 Somewhere Lane, Anywhere, Kansas, could be listed as Smith Farm, Smith and Sons, Ltd., S and S Farms, etc. A record may also be created once for the brucellosis program, again for the tuberculosis program, and yet again for the scrapie program. Some States are better about entering duplicates, but there have been many cases where a given address is associated with five or six different records that were found only after time-consuming database searches.

This level of identification not only supported the needs of specific disease programs, but also provided traceability for foreign animal disease investigations and other disease control efforts. Today, most States are free of tuberculosis, brucellosis, and other significant livestock diseases. With the decreasing need to test and vaccinate animals regularly for these diseases, there has been a drastic reduction in the number of officially identified animals. This has resulted in a "broken" traceability system.

In addition to reduced participation, the current structure poses a second challenge: it is based on animal identification and data collection that is focused on individual objectives (i.e., specific disease eradication programs, interstate commerce, breed registries, and age/source verification). These separate programs use distinct herd and flock identification protocols that are not based on common data standards, and do not use integrated data systems. Because the data systems from separate programs cannot "talk" to each other, an animal may be identified multiple times yet still not be fully traceable. For example, if an animal is only identified as part of the brucellosis eradication program, it is difficult to trace that animal in the event of bovine tuberculosis infection.

This lack of standardization and integration within U.S. animal health data systems is the most significant challenge today in conducting successful animal traceback and controlling animal disease. To overcome this challenge, we must apply common data standards and modern technology so that separate databases can communicate with each other. This will enable animal health officials to access accurate and complete traceback information maintained by multiple sources. When an outbreak occurs, animal health officials must identify the specific animals involved or exposed—including where they have been, when they were there, and in some cases, why they were there. Obtaining this information quickly significantly reduces the scope and magnitude of an animal disease investigation and minimizes the time and costs involved in these efforts.

Resources

NAIS was designed by industry representatives and State and Federal animal health officials to complement the numerous APHIS VS programs and databases already in place to protect animal health and respond to disease. NAIS provides national data standards for animal identification, location, and animal movement information systems that can be used for management, marketing, and animal health purposes for all animal and livestock species. USDA APHIS is focused specifically on animal health programs --- NAIS provides the common link between existing disease control programs and databases. This approach conserves time, money, and effort by using systems and data already in place.

In short, the most efficient, cost-effective approach for advancing the country's traceability infrastructure is to capitalize on existing resources—mainly, animal health programs/personnel and animal disease information databases. These resources represent an available capability and key opportunity to optimize traceability. Accordingly, they will play a significant role in USDA's efforts to strengthen the U.S. animal health traceability system.

A brief description of these resources is provided below.

Animal Health Programs and Personnel

APHIS-Veterinary Services protects and improves the health, quality, and marketability of our Nation's animals, animal products, and veterinary biologics by preventing, controlling and/or eliminating animal diseases, and monitoring and promoting animal health and productivity.

Current examples of VS disease eradication programs include, among others, cooperative State-Federal efforts for:

- Brucellosis in cattle, bison, and swine;
- Tuberculosis in cattle and cervids;
- Scrapie in sheep and goats; and,
- Pseudorabies in swine.

VS also has control and certification programs to address chronic wasting disease in cervids; Johne's disease in cattle; and trichinae in swine. Ongoing surveillance programs include bovine spongiform encephalopathy (BSE), infectious salmon anemia, classical swine fever, and avian influenza.

Disease control and eradication measures include:

- Quarantines to stop the movement of possibly infected or exposed animals;
- Testing and examination to detect infection;
- Depopulation of infected and sometimes exposed animals to prevent further disease spread;
- Treatment to eliminate parasites;
- Vaccination; and,
- Cleaning and disinfection of contaminated premises.

VS animal health programs are carried out by a field force of approximately 250 veterinarians and 360 lay inspectors working out of Area Offices (usually located in State capitals). APHIS' National Veterinary Services Laboratories at Ames, Iowa, and Plum Island, New York—centers of excellence in the diagnostic sciences and an integral part of APHIS' animal health programs—provide laboratory support for these programs.

State animal health authorities are responsible for animal disease issues at the State level, the administration of interstate certificates of veterinary inspection, assisting with the delivery of the Federal programs, and overseeing State-specific disease control activities and regulations.

Accredited veterinarians are private veterinarians authorized by USDA-APHIS to perform official regulatory functions on behalf of the USDA. Accredited veterinarians provide the first line of surveillance for reportable domestic and foreign animal diseases, assist with interstate and international movement of animals and animal products, ensure national uniformity of regulatory programs, and are key participants in State-Federal-Industry Cooperative programs.

Currently, 15,000 of the more than 60,000 accredited veterinarians in the United States are involved in large animal practice. In both 2005 and 2006, accredited veterinarians tested more than 600,000 cows and heifers for brucellosis, vaccinated in excess of 4 million calves against brucellosis, and conducted over 1 million tests for tuberculosis.

Animal Disease Information Databases

A highly reliable, complete, cost-effective information system is key to the success of animal health programs. The APHIS-VS Animal Health Information System (described in Table 2) has evolved over time using distinct herd and flock identification protocols. The NAIS now provides a "standardized source" for key data elements. This enables the various animal health databases to use the same fundamental epidemiological information regarding animal(s), place, event, and time across multiple programs and systems.

Databases are not new to USDA animal health programs. The following databases and information systems were in place prior to NAIS and continue to provide critical infrastructure that supports APHIS-VS animal disease programs. These systems now use the National Premises Information Repository (NPIR) and the Animal Identification Management System (AIMS) to obtain "centralized" and standardized premises and animal identification information. In the future, these databases will be integrated with the Animal Trace Processing System (ATPS), which enables animal health officials to obtain necessary information from all systems when responding to a disease event.

Database	Purpose	Dates	NAIS Link
Animal Health and Surveillance Management (AHSM)	Maintains test and or vaccination data from herds and flocks in disease programs such as brucellosis, tuberculosis, pseudorabies, etc.	1977 (initially known as the Animal Disease Generic Database)	NPIR AINMS ATPS[1]
Veterinary Services Process Streamling (VSPS)	Administration of permits and certificates for import/export, interstate commerce and veterinary accreditation	1996	NPIR AINMS ATPS[1]
Emergency Management Response System (EMRS)	Records information resulting from all foreign animal disease investigations and provides incident management	2002	NPIR AINMS ATPS[1]
[1] The ATPS will be integrated with these databases in the future as the ATDs come on-line.			

NAIS was developed to provide the data standards and system functionality needed to link APHIS VS databases, and those maintained separately by the States and private sector. NAIS is comprised of three elements:

- **Premises Registration.** Registration of locations that manage livestock or poultry (farms, feedlots, veterinary clinics, and livestock markets) with a system that prevents assigning more than one identifier to a given location;

- **Animal Identification.** Officially identifying animals on these premises (either individually or as groups) with an approved method and that accounts for each number issued and the premises to which it was assigned; and,
- **Animal Tracing.** Recording animal movements from one premises to another in private and State Animal Tracking Databases using standard data fields and data transfer.

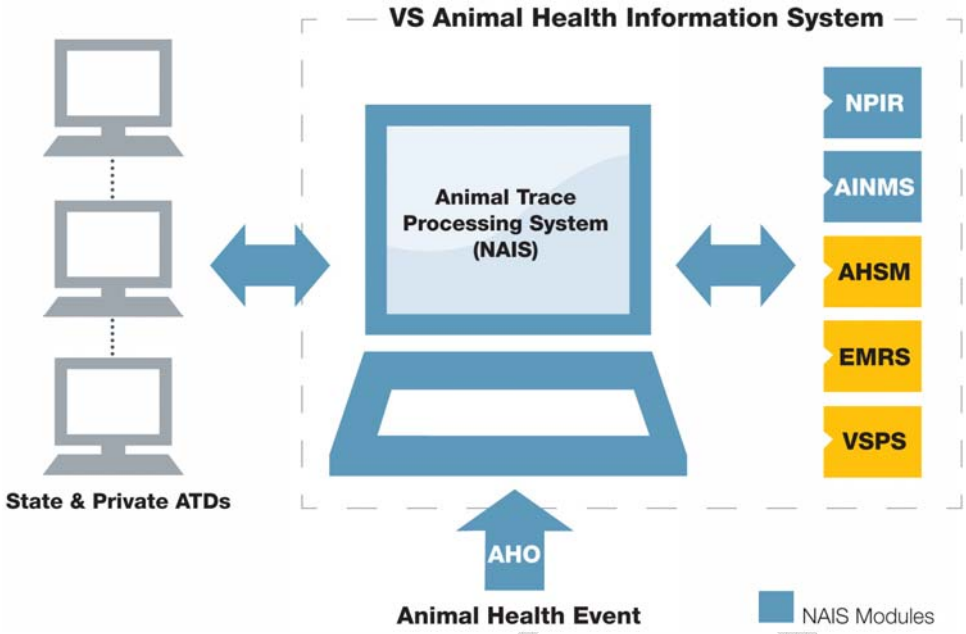
NAIS Participation

NAIS also provides the opportunity for producers that are not part of a disease program to participate in national animal health safeguarding efforts. NAIS is voluntary at the Federal level, and the program has been structured as a Federal-State-Industry partnership. Responsibility for implementing NAIS is shared among numerous entities — State and Tribal governments, industry groups/private companies, and USDA.

Through NAIS, States, Tribes, and Territories use established standards to register premises within respective geographic regions and maintain Premises Registration Systems. Industry organizations and States provide the Animal Tracking Databases (ATD) that maintain animal movement records.

Databases	Purpose	Date Deployed
Standardized and Compliant Premises Registration Systems (SPRS and CPRS)	Administration of premises registration by States and Tribes.	2005
National Premises Information Repository	Maintains record of all PINs allocated and premises information submitted by the SPRS and CPRS	2005
Animal Trace Processing System (ATPS)	Provides communication capabilities with ATDS and all VS Animal Health information systems during a disease investigation.	2007
Animal Tracking Databases	Maintains animal movement records	2007

The USDA provides the Animal Trace Processing System (ATPS) that allows State and Federal Animal Health Officials to have a single point of access to the information needed to conduct an investigation. The following diagram illustrates one of the most significant outcomes of the NAIS — the capability for databases to "talk" when information is needed to support responses to animal disease events.



Authorized access of Federal and State Animal Health Officials to the ATPS is initiated when:

- An indication (suspect, presumptive positive, etc.) or confirmed positive test of a foreign animal disease;
- An animal disease emergency as determined by the Secretary of Agriculture and/or State Departments of Agriculture; or
- A need to conduct a traceback/traceforward to determine the origin of infection for a program disease (brucellosis, tuberculosis, etc.).

Strategies for Advancing Traceability

USDA's overall objective is to establish an animal tracing infrastructure that will retrieve traceback data within 48 hours of a disease detection. For efficient, effective disease containment, animal health officials must have the data required to trace a disease back to its source and limit potential harm to animal agriculture. The speed with which one may access critical animal location and movement information, subsequently referred to as "traceback data," determines the timeliness—and effectiveness—of the disease control and containment effort. USDA defines the retrieval of traceback data within 48 hours as optimal for effective disease containment.

USDA will work toward this long-term objective by implementing immediate, short-term strategies, as outlined in this business plan. These strategies will increase participation in NAIS, bolster the existing animal disease response network, reduce the amount of time required to conduct and complete a disease investigation, and continue to build critical Federal-State-Industry partnerships necessary for animal disease control and eradication success.

While the development of the complete traceability infrastructure is complex and will take significant time and resources, USDA is committed to achieving incremental and timely progress by increasing the number of premises registered and animals identified at their premises of origin. In doing so, USDA will adhere to two fundamental principles:

- Achieving necessary levels of participation (referred to as "critical mass"); and,
- Obtaining the most critical data points—birth premises and animal termination records. This is often referred to as the "book end" approach, and is the most practical starting point.

These practices complement the overall traceability objective for all species while providing a practical and effective approach to advance traceability specifically within those sectors designated as high priority.

Achieving Necessary Participation

"Critical Mass"

The seven strategies discussed below are designed to increase participation in NAIS in order to achieve a "critical mass" of participation. Critical mass is defined as the minimum percentage of officially identified animals within each species/sector required to achieve "traceability." While NAIS implementation guidelines encourage all producers to participate, USDA is focusing first on those stakeholders with the greatest number of animals. For example, in the cattle industry, over two-thirds of the animals are managed by less than one-third of the producers. Those producers represent and accept the greatest biosecurity risk associated with animal disease—they have more opportunities for disease exposure and spread due to the volume of animals, frequency of animal movements, potential for commingling, feed delivery, and human traffic. In this situation, the use of NAIS (premises registration, animal identification, and the reporting of certain animal movements) can substantially assist in mitigating those risks and responding to a disease event if necessary.

In order to achieve "critical mass," USDA estimates that 70 percent of the animals in a specific species/sector need to be identified and traceable to their premises of origin. This estimate will serve as a benchmark for advancing animal disease traceability through 2011. The strategies below are designed to offer short-term advances in the number of animals and

premises officially identified while increasing the quantity and quality of traceback data that could be used to respond to a disease event.

"Bookend" Approach

Current animal identification systems generally provide enough information to allow an animal health official to trace most livestock back to the previous owner's premises, but not to or from the premises of origin (birth). This plan recommends an approach that identifies animals at their birth premises and also at harvest, rendering, or some other termination point—i.e., the "bookend" approach. Being able to conduct a disease investigation from two points of reference, preferably from opposite end points in time, significantly increases an animal health official's ability to more quickly trace a disease of concern.

Today, most disease investigations are conducted using only the information available on the backtag collected at slaughter. These investigations often involve testing hundreds of animals in an attempt to determine the scope of a disease outbreak and to locate potentially affected and exposed animals. The longer an investigation takes, the greater the chance for significant production losses, increased testing costs, restriction of interstate and international animal movement, and, unfortunately, potential further spread of the disease. By using the "bookend" approach in NAIS implementation, the result will be an immediate improvement in the way animal disease investigations are currently conducted. As NAIS implementation proceeds, the animal movement information within the "bookends" will be added to the system, further increasing the efficiency and effectiveness of animal disease investigations as the long-term goal of 48-hour traceback information is achieved.

"Bookend" Approach Scenario

Cow "A" has been diagnosed with bovine tuberculosis at slaughter plant "X". Because cow "A" had a NAIS-compliant RFID eartag applied at the premises of origin, the State animal health official is able to initiate both a traceback from the previous premises and a trace forward from the premises of birth. The NAIS will provide immediate information regarding the animal's premises of origin. Without official identification, determining the origin of the animals could take weeks. By knowing where the animal's movements began and ended, the animal health official is able to review sales receipts and other producer records and talk to previous owners to more accurately and efficiently determine where cow "A" has been and what other animals might have been exposed.

Strategy 1: Prioritize NAIS Implementation by Species/Sectors

Targeted Species

Animal diseases are not always species-specific; therefore, the traceability plan includes all livestock and poultry species. However, the need to advance traceability capabilities for certain species is greater than for others. To address these differences, while also considering the economic merit (sales and revenues) of each species or sector to U.S. agriculture, each species/commercial sector has been designated as either Tier 1 or Tier 2. Tier 1 species/sectors include the primary food animal species/sectors: (1) beef and dairy cattle, (2) swine, (3) poultry (chickens and turkey), and (4) the sheep and goat industry. Additionally, due to its significant revenues to animal agriculture and sometimes continuous movement to events, the sport and competition horse industry is included in the Tier 1 group. All other livestock and poultry are designated as Tier 2.

While animal disease traceability is necessary for all species, this business plan will focus on Tier 1 species.

Species/Sector Prioritization

The information and infrastructure needed to achieve USDA's long-term goal of 48-hour traceback can vary significantly by species, and for sectors within species. Variations in the management and marketing structure of each species sector, including degree of vertical integration, can also complicate progress towards achieving this goal. Prioritization of species/sectors will ensure resources are applied where traceability advances are of the highest importance and that will offer the greatest return on investment.

Method for Determining Priorities

In 2007, USDA conducted a qualitative assessment to determine which species/sectors would benefit most from increased use of premises identification, individual animal or group/lot identification, and the reporting of specific animal movements in regards to controlling and eradicating animal disease. USDA examined the following key factors and their role in advancing traceability:

1. Disease characteristics/issues
   - Risk of contracting diseases of concern (both foreign and domestic)
   - Interaction with other species and/or wildlife and the potential of disease spread to other species or sectors
   - Potential impact to human health
   - Rate and scope of disease spread
   - Degree of animal movements and commingling
   - Existence of an ongoing Federal/State disease surveillance/control/eradication program
   - Cost of indemnifications
   - Historical costs of controlling or eradicating diseases

2. Animal identification
   - Need for individual or group lot identification
   - Current use, if any, of individual or group lot identification methods

3. Disease tracing requirements/capabilities
   - Level of tracing (traceback or trace forward) necessary to control or eradicate diseases of concern (trace to last premises, to birth place, etc.)

- Ability of industry to provide critical animal location and movement information to USDA within 48 hours of a disease detection

4. Demographic information
   - Economic value of industry
   - Size of industry (number of animals)
   - Degree of vertical integration
   - Vulnerability to intentional attack

Definition of Priority Designations

Based on the results of the assessment, each species was assigned a designation of low, medium, or high priority. The designation of "Low," "Medium," and "High" priority reflects the emphasis each species and each sector will be given in the implementation of the strategies and actions of this report.

- The "High" priority designation indicates those species/sectors that currently have the most need to improve traceability infrastructure relative to the risk and impact of disease spread. For example, a "high-priority" species sector may benefit by shortening the timeframe it currently takes to conduct a traceback investigation. In another high-priority species sector, the risk and associated impact of a potential disease outbreak warrants stronger, more comprehensive traceback capabilities.

- The "Medium" priority designation is used for species/sectors that have adequate animal tracing systems in place, but still have significant opportunities for improvement in their traceability levels.

- A "Low" priority designation means that the species/sector either already has high levels of traceability or has lesser disease concerns that would be of economic significance. Therefore, the return on investing additional resources may provide minor benefits from improvements in the U.S. animal health traceability infrastructure.

Priority Designations

The species were prioritized as follows:

Low	Medium	High
Ovine (Sheep) Aquatics[1]	Porcine (Swine) Equine (Horses)[2] Poultry (Chickens and Turkeys) Cervid[1] (Deer and Elk) Caprine (Goats)	Bovine (Cattle)

[1] Tier-2 species that are part of the existing animal health programs within APHIS Veterinary Services.
[2] Competition Horses are designated Tier 1 and Medium priority among Tier 1 Species.

Sector within Species Priority Designations

Most species have a few distinct sectors that may differ significantly in their structure and traceability needs. To ensure proper attention is given to those sectors that have the most to gain, each was categorized separately on the "High" to "Low" scales to reflect sector priorities within the species. These sector ratings are illustrated in the following profiles.

Sector Profiles and Opportunities

The population estimates provided in the following charts were obtained, for the most part, from the 2002 National Agriculture Statistics Survey (NASS) and, when available, from the July 2007 NASS Reports.

Cattle

Industry Size

It is estimated, as of July 2007, that there are over 104 million cattle located on more than 1 million premises.

Cattle Populations	
Beef Cattle[1]	
Cows	33,350,000
Replacements	4,700,000
Other Heifers	8,000,000
Steers > 500 lbs.	14,900,000
Bulls > 500 lbs.	2,100,000
Calves < 500 lbs.	28,700,000
Total	91,750,000
Dairy Cattle[1]	
Cows	9,150,000
Replacements	3,900,000
Total	13,050,000
Total Cattle	**104,800,000**
Premises[2]	
Beef Operations (>1 cow)	762,880
Dairy Operations	75,140
Feedlots (>1000 head)	2,165
Feedlots (<1000 head)	86,000
Other Cattle Operations	120,355
Total	**1,046,540**

[1] *Cattle,* National Agricultural Statistics Service, July 2007.
[2] *Cattle,* National Agricultural Statistics Service, 2006.

Sector Priorities

The cattle sectors overall could benefit significantly from advancing traceability. In particular, the breeding populations are designated as the highest priority, due to their longer lifespan and subsequent likelihood to occupy multiple premises throughout their lifetimes.

Bovine	Sector Rank		
Sector	**Low**	**Medium**	**High**
Bison	■		
Beef – Cow/Calf			■
Beef – Feeder Cattle[1]		■	
Dairy – Cows/Bred Heifers			■
Dairy – Replacements			■
[1] Feeder, Stocker and Fed Cattle			

Beef Cattle

Industry Structure

Independent operations dominate the U.S. beef industry, and while it is not as vertically integrated as other industries, retained ownership of calves beyond weaning has increased. The beef industry has several distinct sectors, including cow/calf operations, stocker/backgrounder, feedlots and harvesting facilities. Often, information on cattle is not seamlessly passed from one sector to another, at least not on an individual animal basis. Accordingly, the ability to trace an animal through all production segments is not consistent.

Tracing Capabilities

According to the 1997 NAHMS Beef Study, approximately 50 percent of the beef producers did not use any form of individual identification on cows and heifers. However, nearly 65 percent of the cows and calves have some form of individual identification. A high percentage (~75 percent) of feedlot and stocker cattle are unofficially identified upon entry for recordkeeping and management purposes. Frequently, however, identification from the birth place is removed upon the animal's arrival at the feedlot or stocker operation. To ensure proper surveillance and response to a contagious disease are completed, animal health officials often find it necessary to test more herds than would be necessary if animal identification was at a higher level. Additionally, the time required to complete disease traceback is greatly extended as the percent of unidentified animals increase.

Opportunities to Advance Traceability

Significant potential exists to enhance traceability capability for U.S. beef herds by focusing on efforts to increase unique identification of beef breeding cattle. Verification programs (source, age, process, etc.) are becoming more common and are impacting the need for animal identification and other information specific to each animal. More fed cattle are identified with RFID tags so their history can be tracked for ownership, genetics, post-weaning performance, health status and carcass composition and quality. While a small percent of breeding heifers are officially identified, a significant number of them are identified through the calfhood vaccinations program. Animal health officials, as a rule, can successfully trace many beef cattle from the slaughter plant to the feedlot. However, the ability to trace individual animals from the feedlot to origin of birth is often limited.

Disease Surveillance Data
Situation: Evaluation and review of USDA adult bovine surveillance data acquired from September 2006 through April 2007 indicate that of 21,893 samples obtained, only 6,203 (28%) possessed an official, unique USDA silver tag or USDA orange brucellosis vaccination tag. An additional 17% of this sample population possessed a unique backtag number. Combined, less than half of adult cattle (45%) can be associated with any USDA official identification system.

Impact: Breeding cattle herds in the United States, which are important to multiple cattle disease surveillance programs, are often lacking unique individual identification. The ability to associate official identification with various points in time, and gain useful information in conducting a traceback, is substantially hampered by this lack of animal identification.

Dairy Cattle

Industry Structure

Like the beef industry, the U.S. dairy industry is not vertically integrated. Herd sizes have increased significantly over the past decades due to the now common practice of raising heifer replacements on farms and ranches separate from milking facilities.

Tracing Capabilities

Approximately half of the 69,000 U.S. dairy herds are identified through the industry's milk recording program, the Dairy Herd Improvement Association (DHIA). Producers who participate in DHIA identify each cow for performance recording, and many contribute to generic summarization. DHIA, for the most part, has used the National Uniform Eartagging System for official identification purposes. Breed registries also provide valuable identification and such records are sometimes used to enhance disease traceback efforts. Holsteins currently represent about 95 percent of the dairy herd, 15 percent of which are registered.

Opportunities to Advance Traceability

By using the standardized PIN in the administration of the National Uniform Eartagging System, a significant number of dairy cattle would be identified to their birth premises. Additionally, the use of NAIS-compliant animal ID numbers for breed registration purposes would increase the number of calves identified and traceable to their birth premises.

Increasingly, dairies are using RFID eartags for management and recordkeeping purposes. Establishing the NAIS "840" numbering system as the official numbering system for RFID eartags and phasing out the recognition of other numbering systems over time will increase the widespread use of NAIS-compliant tags for day-to-day management purposes.

Since many dairy calves and heifers move interstate to rearing facilities and dairy herds, the opportunity to cross-reference individually identified cattle with premises of origin and destination is significant. By revising existing interstate commerce regulations regarding bovine tuberculosis to include the use of the standardized PIN for origin and destination premises, USDA would significantly increase the traceability of a large percentage of the national dairy herd.

National Bovine Tuberculosis Statistics
Situation: From October 1, 2003 through March 17, 2007, 156 positive cases of bovine tuberculosis were identified in the United States. Of those cases, 11% of the animals had no identification whatsoever, and 83% of the positive cases did not have official USDA individual identification present.

Impact: USDA and State investigative teams spend substantially more time and money in conducting tracebacks, including an expanded scope of an investigation to identify suspect and exposed animals. According to disease traceback close-out summaries, the average time spent conducting a traceback for the most recent 27 bovine tuberculosis investigations was 199 days; 125 days for the last 4 investigations.

Recommended Actions – Cattle[1]

- Collaborate with industry organizations, including Veterinarians, to increase the awareness of animal disease traceability issues and to advance premises registrations of cattle operations and official identification at point of origin;
- Integrate NAIS-compliant RFID tags in brucellosis calfhood vaccination program and bovine tuberculosis testing;
- Utilize the standardized Premises Identification Number (PIN) in the administration of all animal disease programs;
- Implement the recording of PINs for the destination of all imported cattle and the last premises of cattle that are exported;
- Use the standardized PIN on Interstate Certificates of Veterinary Inspections (ICVIs) to record origin and destination premises of cattle;
- Increase premises registration of Federally-inspected slaughter facilities; and,
- Integrate the use of AIN devices with the "840" number with industry programs; marketing alliances, verification programs, breed registries, performance recording.

Equines

Industry Size

It is estimated that there are approximately 5.8 million horses on 570,000 premises as of June 2007. This traceability plan focuses on the competition horse industry, specifically race, show and exhibition horses. Using breed registry statistics it is estimated that these sectors account for approximately 50% of the 5.8 million horses.

Industry Structure

Among livestock, horses are unique in that they live longer, are generally more valuable, are transported interstate and internationally more often, and are imported and exported on a regular basis. Many horses are routinely identified for breed registries, horse identification services, or to ensure the integrity of the racing and wagering industry. The traceability of horses for disease control purposes is critical in the competition (sport) horse industry. All sport horses fall into two major categories, with the following subgroups:

- *Race Horses* identified through the breed registry mandatory identification programs; Jockey Club, United States Trotting Association (USTA) and American Quarter Horse Association (AQHA)
- *Show Horses* identified through the new mandatory United States Equestrian Federation (USEF) Horses Identification (HID) Program

[1] For each sector, USDA has identified a number of actions that will help capitalize on the available opportunities to advance traceability. These actions are explained more fully in the remaining "strategies" sections of this document.

Tracing Capabilities

Of the 5.8 million horses in the United States, approximately 2.2 million are tested annually for equine infectious anemia (EIA) using the Coggins test. There are numerous equine breed registries that record individual animal identification and location-related information. However, availability of registry information for traceback purposes is variable. Because a given equine premises may board many different breeds of registered horses, utilized in a variety of different disciplines, a single premises may be registered with multiple organizations, with the resulting address redundancy complicating premises identification.

The horse industry (sport and competition horses)—due to its significant revenues to animal agriculture and frequent, sometimes continuous movements to events—is designated as a high priority sector.

Equine	Sector Rank		
Sector	**Low**	**Medium**	**High**
Competitive Horse Industry (Sport and Competition)			■
Non-competition/Recreation	■		

Opportunities to Advance Traceability

Coggins testing is a prerequisite for all interstate movement (state requirement), and in some states, for intrastate movement as well. Efforts are underway to develop a USDA national state-federal cooperative program for the control of EIA that would establish national EIA (Coggins) testing requirements for (a) interstate movement and (b) change of ownership. Horses must be identified (description/drawing, digital photograph, electronic implant) on the requisite Coggins test-related paperwork. Overall, establishing regulations to require premises registration in association with Coggins testing would substantively increase the number of both premises registered and horses identified. When horses move interstate to attend shows or exhibitions, registration is required upon entry. Accordingly, event officials are able to track horses moving intra- or interstate (via interstate passport) to the farm of origin. Concurrently, animal health officials are able to track to the premises of origin and destination via Interstate Certificates of Veterinary Inspection (ICVI) for horses moving interstate. Though impossible to quantify nationally, experience has shown that the number of Coggins tests performed annually increased three-fold following implementation of a "change-of-ownership" testing requirement in Texas.

The NAIS Equine Species Working Group has recommended the use of ISO-compliant injectable transponders for horse identification.

Recommended Actions

- Integrate the standardized Premises Identification Number (PIN) on Coggins test-related paperwork;
- Implement the recording of PINs for the destination of all imported horses and the last premises of exported horses;
- Use PINs for both premises of origin and destination on ICVIs;
- Collaborate equine organizations to integrate the utilization of the AIN "840" identification devices;
- Expand the utilization of electronic ICVI; and,
- Support industry efforts to integrate automated data capture technologies at equine events and establish necessary interfaces with APHIS VS information systems.

Swine

Industry Size

It is estimated that there are more than 65,000 swine operations in the United States caring for nearly 65 million pigs as of September 2007.

Swine Populations	
Hogs and Pigs[1]	
All Breeding	6,145,000
All Market	58,503,000
Total	64,648,000
Premises[2]	
Operations with Hogs	65,540

[1] *Hogs and Pigs,* National Agricultural Statistics Service, September 2007.
[2] *Hogs and Pigs,* National Agricultural Statistics Service, 2006.

Industry Structure

The majority of swine operations in the United States are relatively small with less than 100 head each. Approximately 95 percent of pork, however, is produced by operations under contract with slaughter plants. About 80 percent is produced by commercially integrated businesses.

Tracing Capabilities

Slaughter plants maintain records regarding the number, date, and supplier for pigs received, permitting traceability to the previous production phase. Commercially integrated businesses are able, with varying degrees of specificity, to trace groups of animals through each segment of the production chain (nucleus, multiplier, production, farrowing, and wean-to-finish operations) for animal disease control purposes. Records are maintained for weaned, finished, or culled pigs regarding movement dates, number moved, as well as where they were moved to and from (specific to both geographic location and building).

Swine	Sector Rank		
Sector	**Low**	**Medium**	**High**
Commercially Integrated Operations		■	
Sows/Boars		■	
Transitional		■	
Food Waste Feeding Operations			■

Opportunities to Advance Traceability

The Group/Lot numbering system included in NAIS fits well with production management practices used in the swine industry. The Group/Lot Identification Number (GIN) incorporates the PIN and the date the group was assembled, providing valuable traceability information simply by examining each GIN itself.

Recommended Actions

- Support the cooperative agreement with the National Pork Board to achieve a high level of premises registrations of swine operations; and

- Implement the use of Premises Identification Number tags for sows and boars.

Poultry

Industry Size

It is estimated that there are more than 1.8 billion chickens and 93 million turkeys on approximately 162,000 locations.

Chicken and Turkey Populations[1]	
Chickens	
• Broilers	1,389,279,000
• Layers	334,435,000
• Pullets	94,882,000
Total	1,818,597,000
Turkeys	
• Turkeys	93,028,000
Total (Chickens and Turkeys)	1,911,625,000
Premises	
Chickens	146,200
Turkeys	16,600
Total	162,800

[1] *Census of Agriculture,* National Agricultural Statistics Service, 2002.

Industry Structure

The majority of chickens and turkeys marketed in this country are part of a highly integrated production chain led by commercial interests.

Tracing Capabilities

The commercial poultry industry is currently able to trace groups of animals through all aspects of the production chain (nucleus, multiplier, breeder, hatchery, grower, and layer operations), for either animal disease control purposes. Records are maintained by the industry regarding specific dates that eggs, chicks, pullets, spent breeders, or layers are moved, the number moved, where they were moved from, and specifically where they were moved to, i.e., the incubator, building, or slaughter plant level.

Poultry	Sector Rank		
Sector	**Low**	**Medium**	**High**
Chickens			
Multipliers		■	
Broilers			■
Layers		■	
Turkeys			■

Opportunities to Advance Traceability

The National Poultry Improvement Plan (NPIP) is a cooperative industry-State-Federal program through which new technology can be effectively applied to improve poultry and poultry products. Regulations regarding NPIP, developed jointly by industry members and State and Federal officials, establish standards for the evaluation of poultry breeding stock and hatchery products, and the elimination of hatchery-disseminated diseases. Nearly 100 percent of the commercial poultry industry participates in NPIP. As a result, the industry is able to provide highly complete premises information when a disease is detected. This government-industry collaborative effort supports a high degree of traceability in the commercial poultry industry.

Recommended Actions

- Establish policy and procedures to ensure the timely availability of premises information from industry maintained systems;
- Work with industry to integrate industry systems that maintain commercial poultry location with the premises registration systems; and,
- Work with the Subcommittee on Tracking and Accountability of the Committee on Live Bird Markets (part of the NPIP H5/H7 Low Pathogenic Avian Influenza Program) to determine how best to locate and obtain non-commercial poultry premises information in a disease emergency.

Sheep and Goats

Industry Size

It is estimated, as of July 2007, that there are approximately 7.7 million sheep on approximately 69,000 premises and 3.6 million goats on more than 91,000 premises.

Sheep and Goat Populations	
Sheep[1]	
Market Sheep and Lambs	3,120,000
Breeding Sheep and Lambs	4,610,000
Total	7,730,000
Goats[1]	
Angora	260,000
Dairy Goats	335,000
Meat Goats	3,000,000
Total	3,595.000
Premises	
Sheep and Lamb Operations[2]	69,090
Goats[3]	91,462

[1] *Sheep and Goats,* National Agricultural Statistics Service, July 2007.
[2] *Sheep and Goats,* National Agricultural Statistics Service, 2006.
[3] *Census of Agriculture,* National Agricultural Statistics Service, 2002.

Industry Structure

The U.S. sheep and goat industry is composed primarily of independent producers and is not vertically integrated.

Tracing Capabilities

Most sheep and goats can be traced back to the flock of origin due largely to industry participation in the National Scrapie Eradication Program (NSEP). An estimated 95 percent of sheep flocks, 52 percent of goat herds, and 130,000 sheep and goat premises are listed in the scrapie database. Of these, 78 percent have requested official NSEP eartags. NSEP works with industry to provide traceability for breeding sheep and cull sheep as well as many breeding goats.

Caprine and Ovine	Sector Rank		
Sector	**Low**	**Medium**	**High**
Dairy Goats		■	
Meat Goats	■		
Exotic Goats	■		
Purebred Sheep		■	
Commercial Sheep	■		

Opportunities to Advance Traceability

Regulation modifications and increased emphasis on enforcement could bring an estimated 90 percent of the sheep and goat industries into 90 percent compliance with NSEP requirements.

Recommended Actions

- Work with industry to achieve the cross-referencing of Flock ID numbers with standardized Premises Registration Numbers;
- Support efforts to increase compliance for existing animal identification requirements; and,
- Work with industry to develop a long-term plan to ensure the animal identification infrastructure is maintained following scrapie eradication.

Strategy 2: Harmonize Animal Identification Programs

As mentioned previously, there are now numerous government and industry programs in place—both in the United States and abroad—that use animal identification. Animal identification may be used for management purposes, marketing opportunities, and disease control. The functions and activities it supports are rapidly expanding. As the uses for animal identification continue to grow, the demand for improved, streamlined animal identification systems and technology is also increasing.

With NAIS, USDA is committed to the development of a flexible identification system that—while meeting the primary needs of animal disease traceability—may be used by the industry for other valuable opportunities. USDA will work with other Federal, State, industry, and international partners to ensure the availability of improved identification methods and compatible processes and data standards that may be used for multiple purposes. Available opportunities for improvement and standardization, both domestic and international, are discussed below in greater detail.

Domestic Programs

Breed Registries and Performance Recording Programs

Breed registry and performance recording programs present a significant opportunity to advance traceability if current identification approaches adopt the common data standards proposed in this plan. Registered and seedstock programs that provide most of the genetic base for the livestock industry require official and accurate identification. In some species, a single numbering system and identification method is preferred, while in others a combination of identifiers is used. Breed registries may use additional techniques such as DNA or tattoos to supplement national standards.

As noted in the dairy profile, the standardized use of the PIN through the administration of the National Uniform Eartagging System in DHIA would bring significant benefits to the industry. Specifically, this practice would result in having the majority of animals in DHIA identified to the birth premises or, at minimum, to the premises where the animal was first officially identified. Likewise, the use of the AIN in the breed registries of all species would help unify identification methods across many sectors of the industry.

Industry Alliances

Participation in marketing alliances is growing rapidly. Animal identification helps document the information necessary for age, source, and process-verified animals. As a higher percentage of cattle producers participate in such programs, the opportunities to capitalize on standardized and compatible systems increase.

Harmonization activities will emphasize collaboration among industry stakeholders. In addition, State and Federal animal health officials will work on shared identification issues. RFID technology, for example, has been highly utilized in marketing alliances for several years. The incorporation of the RFID AIN "840" tag with these programs will increase traceability capability with minimal, if any, additional effort or requirements of the industry.

Agricultural Marketing Service (AMS)

Many AMS verification programs require animal identification. Individual identification is required for USDA Process Verified Programs and USDA Quality System Assessment (QSA) Programs to verify the animal's age. The AMS "Program Compliant" eartag is a one-time use, tamper-evident tag, which contains a non-repeatable, unique number.

APHIS will work with AMS to coordinate definitions of identification requirements to provide solutions that comply with both agencies' requirements. Additionally, AMS is considering how best to incorporate the PIN standard when a location identifier is needed to support their programs.

International Collaboration

Although USDA will not select or require the use of specific technology for use with NAIS, we recognize the importance of having a basic level of standardization for animal identification. Such basic technology requirements ensure, among other things, that other countries recognize the identification technologies and/or devices used with NAIS. Accordingly, the standardization of animal identification with trading partners—specifically Canada and Mexico, due to the high degree of integration with the U.S. herd—is imperative to support trade.

The North American Animal Health Committee and the Emergency Management Working Group have established an Animal Identification Subcommittee to consider animal identification issues and to ensure development of a compatible system. Review of and potential standards for data elements and animal identification technologies are the primary focus. USDA also supports the use of technology standards published by the International Organization for Standardization (ISO); these standards are most important when species, such as horses, move internationally. The appropriate Species Working Groups will provide recommendations on identification and technology standards to support international movements of key animals.

World Trade

USDA actively supports the work of the World Organization for Animal Health (OIE) to develop science-based international standards for the safe trade of animals and animal products. OIE is developing generic standards with basic criteria for use when its 169 member countries are establishing or improving their animal identification programs. While animal identification programs can and should be designed and developed with all pertinent stakeholders, the OIE states that veterinary authorities in each country should provide oversight.

OIE requirements for identification in exported animals and animal products are being established and added to the *Terrestrial Animal Health Code* (Code) chapters for each of OIE's listed diseases. In addition, the OIE will continue its work on the development of specific guidelines for animal identification and traceability. The Terrestrial Animal Health Standards Commission has issued draft guidelines and asked for comments from Member Countries.

Strategy 3: Converge Data Standards in Disease Programs and Regulations

USDA will take steps to adopt and apply NAIS data standards to existing disease programs, including international/interstate commerce regulations. First, USDA will proceed with finalizing the NAIS data standards in the *Code of Federal Regulations* (CFR). The utilization of the standards can then be fully practiced in the administration of disease programs. For example, national data standards that identify premises importing and exporting livestock, locations participating in official disease control programs, and origin and destination premises listed on ICVIs will greatly enhance existing animal disease tracing and emergency response capabilities.

Establishing National Data Standards

Premises Identification Number (PIN)

Use of a single premises numbering system in all animal health data systems is essential to standardize information and enhance existing disease tracing and emergency response capabilities. Since 2004, USDA has been working to establish the NAIS PIN as the standard format for location identifiers.

Premises Identification Number
A PIN is a unique, seven-digit code that includes both letters and numbers (e.g., A123R69). This format was developed for NAIS through discussions with industry and producer representatives. In addition to this PIN format, the *Code of Federal Regulations* (CFR) continues to recognize previous premises numbering systems; for example, Iowa may use IA12345 as valid premises identification. While the State herd numbering system has been used for many years, problems occur when duplicate numbers are assigned to the same location. At this time, more than 400,000 PINs using the new NAIS format have been issued.

USDA published an interim rule on November 8, 2004, in the *Federal Register* (Docket No. 04-05201 Livestock Identification; Use of Alternative Numbering Systems), recognizing the Premises Identification Number (PIN), the Animal Identification Number (AIN), and the Group/Lot Identification Number (GIN) as additional official numbering systems. The alpha characters USA and the numeric code assigned to the identification device manufacturer by the International Committee on Animal Recording were also recognized in order to avoid placing an excessive burden on producers who were already using those numbering systems for identifying their animals.

The final rule, which adopted the interim rule with several changes, was published on July 18, 2007 (Docket No. 04-052-2 Livestock Identification; Use of Alternative Number Systems), taking into account all public comments received during the comment period (which ended on January 7, 2005).

A proposed rule will detail the process for phasing out one of the commonly used premises numbering systems, the State postal code prefix followed by a number.

Animal Identification Number (AIN)—"840" Number

Identification requirements have been established for a number of existing USDA animal disease control programs, specific species, and classes of animals moving in interstate commerce. Currently, AIN devices can be used to meet the official identification requirements for all animal disease programs regulated through the CFR or by the States.

Animal Identification Number
The AIN contains 15 digits, with the first three being the country code. The country code for the United States is "840."

A proposed rule will detail a transition process to official use of the 840 AIN and termination of the official recognition of the USA and manufacturer coded prefixes. This rule will enhance traceability because distribution records for AIN devices are required and are then automatically linked to the standardized PIN. This provides critical and timely information to animal health officials when conducting a disease investigation.

Utilizing Standards with Disease Programs

The convergence of national data standards with disease programs will increase traceability through the following actions.

- **PIN requirement for import/export protocols.**
  APHIS is considering a regulation to require a PIN for livestock import and export movements. Utilizing the PIN for the destination premises importing livestock and the shipping facility exporting livestock will provide more complete and standardized information, thereby enhancing regulations that are already in place. Guidelines and/or regulations for the use of the PIN in health certificates and permits will be top APHIS priority.

- **PIN use in all official disease control programs.**
  Using the PIN as the standard location identifier in all official disease control programs ensures the evolution of a compatible system for locating livestock production and holding premises.

  Disease programs currently use herd and flock identification protocols that vary across programs and are not based on the standardized PIN location identifier. A key first step in increasing traceability is to use the PIN format when recording locations that participate in existing disease programs and related activities. This approach will "jump start" the integration of NAIS data standards into disease programs.

  The assignment of a standardized PIN location identifier is of significant importance to the following Federal disease control programs:
  - Bovine Tuberculosis
  - Brucellosis vaccination and testing
  - Johne's
  - Coggins testing

  - Scrapie
  - Chronic wasting disease

- **PIN use on Interstate Certificates of Veterinary Inspection.**
  The option to use the PIN for origin and destination premises on ICVIs administered by States will provide more precise location information on the animals' planned movement. Accordingly, this option will greatly improve the value of existing documentation certificates already used for interstate commerce.

Strategy 4: Integrate Automated Data Capture Technologies with Disease Programs

USDA will take steps to integrate electronic data capture and reporting technologies into existing disease programs. By using NAIS-compliant radio frequency identification (RFID) devices and integrating handheld computers/readers to replace paper-based forms, animal health officials will be able to electronically record and submit essential data to the USDA

Animal Health and Surveillance Monitoring database and other appropriate animal health databases. Where NAIS-compliant RFID devices are not used, but other official identification devices are, provisions will be made to record the identification information and electronically assist in submitting the information to appropriate animal health databases as well. The electronic collection of data will increase volume and quality, minimize data errors, and speed data entry into a searchable database.

USDA and States have begun to incorporate electronic data capture and reporting into existing programs and information systems. This effort in mobile information management systems (MIMS) for field collection of animal identification data, whether chuteside with producers or at surveillance points such as harvest facilities or livestock markets, is continuing to expand because of need and success. Examples include the electronic bovine tuberculosis testing system, electronic brucellosis system for vaccination and testing, electronic ICVI, and the scrapie handheld system.

Aligned with improving government performance as outlined in the President's Management Agenda of FY2002, these advancements are consistent with the goal of expanded electronic government. This migration from paper based animal health data collection systems to electronic based systems is part of an Agency-wide eGov initiative to meet this goal and is congruous with the requirements of the Government Paperwork Elimination Act.

Electronic Bovine Tuberculosis Testing System

For fiscal years 2005 and 2006, over 7,000 herds and over 250,000 cattle were tested for bovine tuberculosis in Michigan alone. Each animal was required to be individually identified and the number recorded on official tuberculosis test records. For those animals previously identified with visual only devices, each animal had to be head-restrained and the number accurately recorded from its ear tag, sometimes requiring extra effort to clean the tag of debris to be readable. If for no other reason than safety for the animals and handlers, the development of automated data capture technology to electronically read and transfer the necessary animal health information to animal health database was needed. APHIS VS has developed automated systems based upon readily available and price conscious technology such as RFID for use by Federal and State animal health officials to assist with tuberculosis testing. In the current bovine tuberculosis investigation in the State of New Mexico, in one day over 1,300 animals were test evaluated for the disease, identification and complete test form data recorded, and the data transmitted to animal health databases without ever using a pencil or pen. This tuberculosis control and eradication effort has served as a model for the development of other animal health automated data capture systems. The accuracy and efficiency of the data collection, and the seamless interaction with appropriate animal health databases, provides critical traceability information now available from APHIS VS animal health program databases.

Electronic Brucellosis System – Vaccination and Testing

Approximately 4 million beef and dairy heifers are vaccinated annually for brucellosis. In addition, for surveillance purposes, about 4 million slaughtered cattle , 3 million livestock market cattle, and 1 million cattle on farms are tested for brucellosis. In all cases with the exception of slaughter surveillance, the animals are individually identified using official identification. More specifically, vaccinated animals are permanently identified with an ear tattoo and by placing an official vaccination tag in the right ear. The orange brucellosis vaccination tag has, over many years, been used to easily identify vaccinates and because the animal does not have to be handled to readily recognize it has been vaccinated, it is highly valued by the industry and animal health officials. The official vaccination eartags follow the format of the nine-character National Uniform Eartagging System, starting with the State prefix (two alpha characters).

With over 12 million annual observations possible through the brucellosis vaccination and testing program for cattle, automated data capture systems to upload this information into

APHIS VS animal health databases are integral for enhancing traceability information. AIN eartags that incorporate RFID technology meet the requirements for official identification of brucellosis vaccinated or tested animals. If an AIN tag is used as the official identifier, the complete AIN must be recorded on the official vaccination or official testing form. As currently proposed and in development, the automated data capture system will integrate radio frequency technology with recording the identity of heifers as they are vaccinated or for animals being tested. The AIN will be captured electronically by handheld scanners. In addition, the associated information currently collected on the forms, along with the PIN, would be recorded electronically and then collectively, the information will be automatically entered into the APHIS VS Animal Health and Surveillance Management System (AHSM) database. This effort will provide the essential epidemiological information of animal identification, place, event, and point in time necessary for traceability.

Electronic Interstate Certificate of Veterinary Inspection (ICVI)

Commonly known as health certificates, ICVIs are required for transporting livestock and poultry across State boundaries. A copy of the document must accompany each shipment. For interstate purposes, this document is intended to inform the State of origination and the State of destination of animals officially identified that have been inspected by an accredited veterinarian and meet specific animal disease requirements for movement eligibility. Many times, the certificate of veterinary inspection is linked to other APHIS VS animal health programs such as brucellosis vaccination and testing, tuberculosis testing, and equine infectious anemia testing (EIA testing commonly known as Coggins testing), among others. It also can link to various veterinary diagnostic laboratories. As a result, this document provides useful epidemiological information needed in a traceback disease investigation. To facilitate timely transfer of this information document, APHIS VS has developed an electronic form of this document referred to as an Electronic Certificate of Veterinary Inspection (eCVI).

In the development of the eCVI, NAIS data standards regarding animal identification and premises identification have been incorporated. This is essential as this document links to multiple APHIS VS animal health databases and the ability to communicate with multiple databases is important for timely retrieval of traceability information. This is even more important with the continued evolution and development of the eCVI as it applies to all livestock and poultry species in documenting eligibility for movement of animals and animal products, not just a program disease associated with a particular species or livestock industry. Accredited veterinarians in 15 States currently use the eCVI having officially identified over 850,000 animals in the past 18 months. In that same time frame, a nine-fold increase in the number of accredited veterinarians using the system on a monthly basis has occurred. The eCVI has the capability of accepting 900 unique individual identification numbers electronically per form. With new improvements yet to be deployed, and planned for early 2008, it is expected that this source of valuable and integrated traceability information associated with APHIS VS animal health programs will increase exponentially.

Electronic international health certificates are also being planned for development. The importance of electronic access to traceability information associated with all import and export animals uniquely identified, along with associated premises identification numbers of destination and origination points, will be instrumental not only in global trade, but for response purposes as well.

Scrapie Handheld System

Electronic test charts for scrapie susceptibility genotyping are created in the field using official "840" RFID identification eartags, RFID readers, and tablet personal computers. The electronic charts are then routed to the Animal Health and Surveillance Management (AHSM) system database and transmitted electronically to a contract laboratory for association with sample testing. The results are then returned electronically to AHSM. The

electronic collection of data in the field minimizes transcription errors and ensures the timely entry of test results into the database.

The National Scrapie Eradication Program also uses official RFID eartags to identify scrapie-exposed animals. A software program is being developed to capture these identification numbers using a mobile system similar to the one used to upload test charts into AHSM. As a result, traceability information associated with animals at increased risk will be readily available.

Strategy 5: Partner with States, Tribes and Territories

Successful animal disease control programs are a result of well-established partnerships among Federal, and State animal health authorities, accredited veterinarians, and many other resources throughout the industries.

State-Based Priorities and Traceability Plans

State/Tribe/Territory animal health authorities play a critical role in advancing national animal disease traceability. NAIS is a national effort and has Federal accountability, but it is administered by States, Tribes, and Territorities at the local level. Working in close partnership with State, Tribal, and Territorital animal health officials, USDA will continue to support the advancement of each State/Tribe/Territory's disease traceability infrastructure. Each State/Tribe/Territory will administer and manage localized plans reflecting the animal health priorities in individual regions.

Cooperative Agreements

In providing Federal support for NAIS implementation activities and infrastructure within each State/Tribe/Territory, APHIS VS administers a Federal funding instrument referred to as a cooperative agreement. This differs from a grant whereby grant recipients follow Federal guidelines, but recipients are more independent in using the funds. With a cooperative agreement, both parties contribute to the successful completion of the project as outlined in the application and mutually agreed-upon work plan. Cooperative agreement awards require quarterly reporting and engagement of Federal oversight in the successful completion of the goals, objectives, and description of efforts described in the work plan. Beginning with fiscal year 2008, this proposed business plan will uniquely serve as a blueprint for the development of work plans associated with NAIS implementation cooperative agreement funding.

The overall goal for NAIS implementation cooperative agreement funding will be to advance animal disease traceability. This business plan will provide a uniform guideline for all applicants in prioritizing goals, objectives, and strategies in developing their cooperative agreement work plans. Each State/Tribe/Territory will be required to evaluate, describe, and identify animal disease traceability risks within their boundaries. Priorities of industry, species, or sector will be aligned with the priorities outlined in this business plan. Developed work plans will describe how each applicant will reduce those risks and advance animal disease traceability within their State/Tribe/Territory. Because States/Tribes/Territories have made varying progress to date regarding NAIS implementation, this approach will allow each applicant the flexibility needed to advance animal disease traceability appropriate for each applicant. This approach in development of NAIS implementation cooperative agreement applications also builds upon previously funded efforts as the lack of premises identification and the lack of NAIS participation and use of NAIS standards in developing traceability capability are indeed traceability risks. The developed approach to reducing those traceability risks will be projected through 2011, partitioning progress goals for each year using the same strategies. By allowing States/Tribes/Territories to tailor their needs and NAIS implementation work plans in concert with this overall Federal business plan,

monitoring of performance measures and the integration of budget with that performance will be more uniformly applied to all applicants regarding Federal accountability needs.

Strategy 6: Collaborate with Industry

Active involvement and support from producer organizations and other key figures in the animal agriculture community is essential to establish a successful NAIS and advance national animal disease traceability. These groups provide a direct link to producers, offering an invaluable resource to communicate clearly about NAIS and secure the level of participation needed to make it fully functional for all industry sectors. With this in mind, USDA will pursue a variety of avenues to strengthen partnerships with industry and solicit direct feedback from producers and other key industry stakeholders as we proceed in developing NAIS.

NAIS Subcommittee and Species Working Groups

As the NAIS has progressed, the needs and comments of many individuals have shaped its development. Unique needs and preferences must be considered and addressed to make the system work well for different parts of the animal industry and also for U.S. producers who raise many different species of animals in many different environments.

Some issues can only be addressed sequentially as the NAIS is developed and more fully implemented. The Species Working Groups represent a significant, first-tier level of those individuals who will help shape the answers to many of the remaining technical and procedural issues concerning the NAIS. The groups' primary objective is to provide their species-specific knowledge and experience to address species-specific issues and further NAIS' development and implementation.

The working groups include representatives from various levels and segments of industry. Their input to NAIS' development is critical, and they contribute the species-specific, ground-level information that is necessary to create an effective system. NAIS working groups are focused on the production of cattle (beef and dairy), bison, poultry, swine, sheep, goats, deer and elk, equines, and alpacas and llamas.

The recommendations developed by the various Species Working Groups are provided to the NAIS Subcommittee, which is aligned with the Secretary's Advisory Committee on Foreign Animal and Poultry Diseases. The Subcommittee is comprised of State and industry stakeholders, with Federal staff providing program resources and administrative support. In addition to the recommendations from the Species Working Groups, the Subcommittee also accepts recommendations from State and national organizations.

The NAIS Subcommittee reviews and consolidates recommendations it receives, and in turn, reports its findings to the Secretary's Advisory Committee on Foreign Animal and Poultry Diseases. This structure for gathering input and shaping decisions provides an excellent opportunity for industry issues – including those unique to producers – to be thoroughly discussed and to have a consensus position shared with USDA.

The species working groups continue to meet and facilitate discussion on issues and solutions relative to the advancement of traceability. In developing this business plan, USDA carefully considered many of the groups' recommendations over the past several years, and this input was incorporated into the strategies described here. As USDA continues to move forward, the species working groups will continue to evaluate the strategies in use, offer input, and identify new strategies needed as the action items are successfully put in place.

Support Industry Leadership Efforts

Achieving traceability objectives requires a partnership between the production sector and animal health officials. Partnering with industry organizations enhances communication efforts as producers receive information directly from the organizations they know and respect. USDA, through cooperative agreements with industry non-profit organizations, is supporting outreach efforts and the registration of premises. The organizations, with producers' consent, assist with the completion of the premises registration form and provide it to the appropriate State animal health authority's office for processing.

As of October 1, 2007, APHIS signed cooperative agreements with seven organizations:

- National Pork Board
- United States Animal Identification Organizations
- National Future Farmers of America (FFA)
- National Milk Producers Federation for IDairy
- American Angus Association

- American Sheep Industry
- Humane Farm Animal Care

Additional agreements are being reviewed at this time.

Through the efforts of these organizations, a significant number of new premises are slated to be registered. The actual processing and administration of the registrations will remain the responsibility of each animal health official.

Additional partnership efforts with industry alliances, service providers, auction markets, feedlots, harvesting facilities, and other industry sectors are a priority for USDA.

Practitioners/Accredited Veterinarians

Veterinarians are often the most utilized source of information by producers. As an "on-farm/ranch" expert, they are conduits for information and serve as first responders to disease outbreaks. USDA has established an outreach program specific for accredited veterinarians. This collaboration with USDA accredited veterinarians with large animal clinics and/or practices will enable the delivery of accurate information on the NAIS to producers, breeders and animal owners who have a business need to protect the health of their animals. The knowledge of veterinarians will enhance the adoption of NAIS data standards in everyday management and disease program activities at the producer level.

In addition, USDA is developing a NAIS training module for use in the veterinary accreditation process. USDA is also including information about NAIS in all disease related training modules, as traceability is a key component of all programs.

Markets/Auctions

In order for the NAIS to enable effective traceback in the timeliest manner possible, the recording of animal identification at critical control points, such as markets/auction barns where commingling occurs, is necessary. Likewise, USDA must identify practical methods to cost-effectively record animal identification numbers at the "speed of commerce" at these locations. With these goals in mind, APHIS continues to work with market groups to address their concerns related to (1) the ability of current technology to meet the needs of all livestock markets, in particular the high volume markets; (2) the cost of the infrastructure; and (3) potential responsibility for tagging animals on arrival, since the additional handling will increase "shrink," require additional labor and administration.

Kansas State University recently released a report, available online, that outlines information about costs, opportunities, and recommendation for the implementation of the NAIS in Kansas auction markets. This report is one example of progress being made and APHIS' renewed focus and efforts to address issues for this important segment of industry.

Harvesting Facilities

As we progress toward enhanced, effective animal traceability, it is fundamental not only to know the premises of origin of animals for certain species, but also to know which animals have been terminated or removed from the population. This "bookend" approach of knowing an origination and a termination point improves our ability to determine other animal locations when conducting a traceback investigation.

An ongoing NAIS-funded project, coordinated by Colorado State University, is designed to gather input from beef, lamb, and pork processing plants and renderers concerning implementation of NAIS within their industries. Outcomes will include recommendations about how the packing and rendering industries might contribute to the needs of NAIS and may address issues of interest, including: (1) the potential complications associated with the use of injectable transponders for individual animal identification; (2) responsibility of removing those devices to avoid product contamination; (3) how to possibly deal with group/lot identification alternatives; and (4) the impact of data collection infrastructure on the speed of commerce.

Brand States

Fifteen States have brand inspection programs with either full or partial State participation. With the initiation of premises registration in late summer of 2004, many brand programs assisted NAIS implementation with promoting premises registration, and continue to do so. By virtue of their proximity to producers, brand inspection personnel have been able to provide valuable feedback regarding implementation efforts.

Microsoft Word.lnk After 2 years of work in promoting NAIS and observing NAIS implementation progress, brand inspection personnel requested an opportunity to assess mutual opportunities with NAIS staff in October 2006. A Brand State Working Group was organized to specifically define and demonstrate how official brands can best be used to support the objectives of NAIS and offer the results for consideration and inclusion in NAIS plans. The working group is also exploring cooperative efforts that might be of merit to the brand system as well. We have received valuable feedback so far and will continue working closely with brand States on NAIS issues. USDA remains committed to ensuring that NAIS capitalizes on the merits of branding and the brand systems infrastructure as the program moves forward. Brands and the brand infrastructure will continue to be a vital part of animal identification.

Strategy 7: Advance Identification Technologies

Continued advancement in traceability requires practical and affordable technological capabilities that increase the efficient and accurate collection of animal identification information. To be successful, the data collection infrastructure must operate at the "speed of commerce" and in a multitude of different environments, including harvesting facilities.

Performance Standards

Although USDA has adopted a technology-neutral position, APHIS recognizes that performance standards are necessary to ensure device compatibility across multiple platforms. Examples include ISO 11784 and 11785 for the Radio Frequency Identification of Animals. Detailed and measurable performance standards for these technologies must be clearly defined and established through stakeholder consensus. This approach ensures technologies can be successfully used beyond NAIS, including management and marketing opportunities.

The American Society for Testing and Materials (ASTM) International Committee F10 on Livestock, Meat and Poultry Evaluation Systems is organizing a task force of interested stakeholders to establish criteria for RFID performance standards. Eventually, these additional performance standards and testing protocols will be used to develop and approve NAIS-compliant devices.

Advancing Technologies

The animal health traceability infrastructure will continue to improve as market-ready technology for animal identification systems evolve. Field trials to assist industry in the evaluation of such technologies will be administered through specific NAIS-structured cooperative agreements. USDA remains cognizant of the need for animal identification and traceability needs not to interfere with the speed of commerce. By continuing to monitor current technology standards with an eye to emerging technologies, it is expected that over time the collection of necessary traceability information will become seamless and routine. Issues of backward or multi-frequency compatibility, cost, and niche applications are also important. By continuing to participate in stakeholder meetings of standardization interests, future solutions can be achieved.

NAIS Budget Summaries and Plans

Summary of Funds and Obligations

Available funds

From 2004 through FY 2007, $118,050,000 has been made available to USDA APHIS to implement the NAIS.

- Fiscal year (FY) 04 funding: $18.8 million from Commodity Credit Corporation (CCC) funds for implementation of the NAIS.
- FY 05 Consolidated Appropriations Act included approximately $33 million in the Animal Health Monitoring and Surveillance line item to continue into the second phase of implementation of the NAIS.
- FY 06 Agriculture Appropriations Act included approximately $33 million in the Animal Health Monitoring and Surveillance line item.
- FY 07 Agriculture Appropriations Act included approximately $33 million in the Animal Health Monitoring and Surveillance line item.

Congress has stipulated that obligational authority for appropriated NAIS funding shall remain available until expended. For this reason, APHIS and its State cooperators have been able to spend conservatively as the implementation plan has developed. APHIS has been able to carry funds forward from FY 05 into FY 06 and from FY 06 into FY 07.

Funding Availability

	CCC Funds	2005 Approp.	2006 Approp.	2007 Est.	Total
Total Availability	$18,793	$33,197	$33,007	$33,053	$118,050

NAIS Budgets

The NAIS budgets are categorized in four primary activities:

- Information Technology
- Cooperative Agreements
- Communications and Outreach
- Program Management: Headquarters, Field Staff, materials and overhead (assessments/overhead)

The planned budgets for funds available to date are summarized in the following chart and actual obligations are presented in the following chart.

Planned Obligations

	CCC Funds	2005 Approp.	2006 Approp.	2007 Approp.	Total	% of Budget Plan
IT Development, Maintenance, and Ops	$2,009	$6,858	$7,733	$5,224	$21,824	18.5%
Cooperative agreements	$14,357	$17,050	$13,882	$15,067	$60,355	51.1%
Communications and outreach	$2,137	$3,474	$1,940	$1,940	$9,491	8.0%

Program Management	$290	$5,815	$9,452	$10,822	$26,379	22.3%
Total	**$18,793**	**$33,197**	**$33,007**	**$33,053**	**$118,050**	

Obligations

As of August 30, 2007, approximately $102 million has been obligated to support the development and implementation of the NAIS. A summary of accomplishments resulting from these investments is provided in this chapter.

Actual Obligations as of the end of September 2007						
	CCC Funds	2005 Approp.	2006 Approp.	2007 Current	Total	% of Budget Plan
IT Development, Maintenance, and Ops	$1,829	$4,140	$2,466	$6,260	$14,695	14.4%
Cooperative agreements	$13,666	$12,936	$5,231	$20,311	$52,144	51.2%
Communications and outreach	$2,134	$2,557	$2,422	$2,951	$10,064	9.9%
Program Management	$357	$3,948	$6,424	$14,264	$24,994	24.5%
Total	**$17,987**	**$23,581**	**$16,543**	**$43,786**	**$101,896**	

Utilization of Funds by Budget Category

Information Technology

USDA has utilized approximately 15 percent of the NAIS funds to the development of high caliber information systems. The program objectives have been implemented in three phases to meet the needs of each NAIS component. Listed below each phase are the applications developed, maintained and supported to support that phase:

- **Phase 1: Premises identification and registration**
  - Standard Premises Registration System
  - Premises Identification Number Allocator
  - Data Management Center
- **Phase 2: Animal identification**
  - Animal Identification Number Management System
- **Phase 3: Animal tracing**
  - Animal Trace Processing System

Appendix 1 provides an overview of each NAIS system component and their interaction with other systems that support State and Federal animal health programs.

Eighty percent of the IT funds have been used to support premises registration, 14 percent for animal identification and 6 percent for the tracing component which includes interacting with the State and private Animal Tracking Databases.

Cooperative Agreements

Cooperative Agreements with States and Tribes

Similar to other VS disease programs and activities, NAIS is carried out at the local level with the assistance of States and Tribes through cooperative agreements. A significant portion of NAIS funding (51 percent) has been used to administer and deliver the program through these cooperative agreements. These funds provide resources to conduct education and outreach efforts. They have also been used to administer premises registration activities and to hire Animal Identification Administrators/Coordinators. Cooperative agreement funds have also supported selected pilot projects to explore innovative methods of premises registration, animal identification, and animal tracing.

The initial projects funded by CCC supported 40 States to initiate outreach and premises registrations. Sixteen agreements utilized approximately $7 million to support pilot projects. The outcomes of these pilot projects are summarized in the document "Appendix 3" and the report is posted on the NAIS Website. An additional $3 million was made available to support Field Trials and Research in late 2005.

In FY 05 through FY 07, an additional $33 million in appropriations have been obligated to State/Tribe cooperative agreements to support the implementation of the NAIS. As of early October 2007 over 420,300 premises had been registered. The NAIS Website is updated weekly with premises registration statistics by State.

Cooperative Agreements with Non-Profit Industry Organizations

In early 2007, USDA entered into several cooperative agreements with nonprofit industry organizations that wished to partner with USDA and the States. These cooperative agreements will support the efforts of those organizations to promote NAIS and, specifically, increase participation in premises registration – the foundation of NAIS. Approximately $9 million has been allocated to support these important collaborative efforts.

Communications and Outreach

Through a combination of CCC and appropriated funds, USDA developed and implemented a multi-year, national outreach and education campaign aimed at increasing producer awareness and understanding of NAIS and promoting producer participation in premises registration – the foundation of NAIS.

Overview

USDA initiated the campaign in July 2004 with a budget of approximately $2 million. The initial phase of the campaign focused on increasing producer awareness of NAIS and encouraged producers to seek more information about NAIS from their State animal health officials and from USDA's NAIS website.

In May 2006, USDA expanded the communications effort, emphasizing the importance of premises registration and offering practical information to producers about how to participate in NAIS. Central to the 2006 effort was the integration and coordination of outreach activities with State NAIS Administrators through the NAIS Community Outreach Program. This program, designed to support the network of State NAIS Administrators in their efforts to promote premises registration, provided Administrators with training to hone communications skills, ensured the development and delivery of consistent information throughout all levels of the program, allowed for the dissemination of timely and accurate information, and provided ongoing opportunities to exchange best practices among State participants.

Today, the outreach and education campaign remains focused on

- Increasing premises registration totals (in line with stated USDA objectives);

- Promoting producer participation in all three components of NAIS – premises registration, animal identification, and animal tracing; and
- Returning the national debate on NAIS to animal health and emergency disease response.

Continuation Plan

Research
USDA will review the existing NAIS Outreach Best Practices Audit and conduct any additional research that is needed to support the overall integrated communications strategy.

Communications Plan and Campaign Implementation
The current NAIS messaging and materials focus on premises registration and include both general and species-specific brochures, topic-specific factsheets, and paid advertisements. Partner-oriented materials include a communications handbook, PowerPoint presentations, and other internal and external collateral to support partner efforts. In the coming year, USDA will develop additional materials that offer information on all three NAIS program components. These materials will be tailored to appropriate stakeholder groups, including minority and underserved producer communities. Emphasis will be placed on developing messages and materials that anticipate the opposition and stress producers' ability to tailor their participation in NAIS to meet their needs.

Partnership Development
USDA will continue to develop and nurture partnerships with appropriate state, federal and industry stakeholders. USDA will work to maintain existing partnerships with CSREES/Extension and develop new partnerships with appropriate agricultural organizations, including other USDA agencies that have a vested interest in the success of NAIS. USDA will develop tactics and design and produce materials for partners' use. USDA will also maintain and grow the ongoing NAIS Community Outreach Program

USDA plans to host another 2-day Community Outreach Partner (COP) event to build on the success of the first COP event held in October 2006. This event will provide partners with an opportunity to share ideas, network, gain training to enhance their communications and marketing efforts, and learn about current national NAIS operational and communications efforts.

Web Site Enhancement
Recent enhancements included incorporating updated program messaging, revamping the document library, and improving navigation. Moving forward, the site will be further enhanced to serve the goals and objectives of the communications effort. The web site is a critical communications tool and will continue to be a central source of current information. USDA is also exploring the development and use of a Community Outreach Partner portal. A portal will provide the Partners with a secure online location to exchange comments and recommendations, access documents and outreach materials, view and post announcements, and view a common calendar of upcoming events. This "one-stop-shop" resource will ensure information is accessible in real time, that messages and themes are consistent between regions, and that feedback can be given and received at multiple levels.

Headquarter, Field Staff and Assessments

Program management carried out by APHIS Veterinary Services and assessments (departmental and agency) account for 10.2 percent and 14.3 percent, accordingly. Program management includes headquarter staff and travel and support of field staff through the regional offices.

FY07 Funds and Investments

APHIS had approximately $59.1 million available in FY 07 (includes $33 million in new funding and approximately $26.1 million in carryover funding). APHIS planned to utilize the funds to support the following activities:

- $7.9M IT Development, Maintenance and Operations
- $36.6M Cooperative Agreements and Integration with Disease Programs
  - $14.5M - State Tribe Cooperative Agreements
  - $2.1M - Field Trials (continuation of agreements)
  - $9.8M - Industry Premises Registration
  - $9M - Integration of NAIS with Disease Programs
  - $1.2M – Other
- $3.1M Outreach and Education
- $11.5M Field, Headquarters Staff and Assessments/Overhead

As of September 30, 2007 APHIS has $5.3 million in non-committed carry-over funds (summarized in the following chart).

Summary of Carry-Over Fund Commitments	
Non-obligated Balance	**$16,154**
Committed Investments	
Industry Cooperative Agreements	$4,747
1890's and Hispanic Outreach Agreements	$1,800
Integration of NAIS in MI TB eradication	$50
Ohio Depart of Ag (Ultra Band RFID Frequency Field Trial)	$398
AIN RFID Tags for Disease Programs	$2,280
Development and Implementation of Electronic Brucellosis system	$1,500
Total Commitments	**$10,775**
Balance	**$5,379**

2008 Budget Plan

In preparing the implementation plan, APHIS assumed that the budget for the voluntary National Animal Identification System (NAIS) will remain at $33 million annually. The panned utilization of by category is as follows:

- $5.5M - IT Development, Maintenance and Operations
- $15.8M - Cooperative Agreements and Integration with Disease Programs
- $1.2M - Outreach and Education
- $10.5M Field, Headquarters Staff and Assessments

The following chart provides more details on the FY08 plan.

Information Technology	
Equipment	$490,000
Software	$425,000
Services	$672,000
Support Services	$3,096,000
Personnel	$831,300
Subtotal	**$5,514,300**
Cooperative Agreements	
State Tribe Implementation CA's	
Eastern Region	$5,200,000
Western Region	$9,200,000
Integration with Disease Programs & Industry	$1,400,000
Subtotal	$15,800,000
Outreach	
Legislative and Public Affairs Communication Activities	$1,200,000
Subtotal	$1,200,000
Headquarters, Field, Assessments	
HQ	$1,000,000
Regions and Field	$2,500,000
Assessments/Overhead	$7,038,300
Subtotal	$10,538,300
Total	**$33,052,600**

Summary of Accomplishments

NAIS Activity Summary by Component

Activity	Results/Status (October 1, 2007)
Premises Registration	419,722 registered premises (approx 30% of premises)[1]
Animal Identification	5 Approved AIN Device Manufacturers 8 Approved AIN Devices 4.5 million tags shipped ▪ 1.84 million AIN tags ▪ 2.67 million scrapie program tags
Animal Tracing	14 Organizations with Interim ATDs 16 Organizations (including some of the Interim ATDs) participating in Implementation Phase
[1] The National Agriculture Statistics Survey (NASS) estimates 1.4 million livestock farms in the United States (premises more than $1,000 in annual income. Premises with more than one species are counted one time).	

Summary of NAIS Key Accomplishments

Date	Activity	Comments
Publications of Guidlines and Revisions to the Code of Federal Regulations		
November 2004	Publication of interim rule to establish the Premises Identification Number, Animal Identification Number and Group/Lot Identification Number as official numbering systems.	Final rule published July 2007.
May 2005	Published the NAIS Draft Strategic Plan	Stakeholders provided feedback, including comments on participation requirements.
May 2005	Published the NAIS Draft Program Standards for the administration of all components of the NAIS.	These initial program standards remain the catalyst to achieve a uniform system nationwide and, on occasion, are added to.
August 2005	APHIS annouced privatization of the animal tracing component and later held a public meeting to discuss options and ideas for establising animal tracking systems.	
March 2006	Publication of guidance document for the administration of AIN devices – "Administration of Official Identification Devices with the Animal Identification Number."	The AIN Management System currently stores the distribution records for over 1.8 million AIN tags and 2.7 million scrapie tags.
April 2006	Formulated the structure of State and Private Animal Tracking Databases (ATDs) to maintain animal movement records, and the Animal Trace Processing System (ATPS) to communicate with the ATDs.	The process for establishing compliant ATDs achieved in mid-2007.

Date	Activity	Comments
November 22, 2006	Published Draft User Guide.	Guide replaced previous NAIS documents to clarify NAIS as a voluntary program at the Federal level. Continues to be a guidance document for producers. Version 2.0 to be published in January 2008.
February 1, 2007	Posted the NAIS Program Standards and Technical References on the NAIS web site.	Update to the initial standards published May 2005.
February 1, 2007	Published the ATD Technical Specifications.	Resulted from industry cooperation through the Interim Development Phase of the ATDs.
February 2, 2007	Posted the Request for Proposals (RFP) for Cooperative Agreements with industry to support premises registration.	Resulted in 7 cooperative agreements with industry to support premises registration activities.
October 15, 2007	Posted an update to the NAIS Program Standards and Technical Specifications	Inlcudes eartag specifications for sows and boars that resulted through collaboation with the swine industry.
Program Development and Implementation		
June 16, 2004	Initial Cooperative Agreements (from CCC funds) awarded to States and Tribes for the implementation of premises registration and various field trial projects.	See Appendix 3 for a summary of outcomes. The full report is of the 16 pilot projects are posted on the NAIS Website.
June 25, 2004	Selected the premises registration system developed by the Wisconsin Livestock Identification Consortium as the application software to make available to States and Tribes, referred to as the Standardized Premises Registration System (SPRS).	SPRS currently used by 41 States, 12 Tribes, and 2 Territories.
July 23, 2004	Deployed the Standardized Premises Registration System and trained the first State (Illinois).	On-site training provided to an additional 40 States through August 2005.
September 1, 2004	Approved the first Compliant Premises Registration System (CPRS).	9 States use 4 CPRS to register premises.
August 2005	Premises registration systems operational in 50 States.	
October 1, 2005	Deployment of AIN tags for animal disease programs (scrapie, bovine tuberculosis, chronic wasting disease).	
July 24, 2006	APHIS authorized first AIN tags from two manufacturers for general use in the NAIS.	5 AIN device manufacturers now provide 8 approved identification devices with the AIN.
July 27, 2006	USDA entered into first interim cooperative agreements with ATDs that met the minimum technical standards.	Worked through January 2007 with 14 interim ATDs to collaborate on the development of the technical specifications of the ATPS.

Date	Activity	Comments
October 31, 2006	Launched the NAIS Community Outreach Program for State and industry representatives.	Provided state and industry partners outreach tools to promote premises registration.
December 2006	Implemented Tribal Premises Registration System.	10 Tribes trained and operational on Tribal Premises Registration System.
January 30, 2007	Achieved the benchmark of 25 percent of national total of premises registered.	
March 17, 2007	Deployed the Animal Trace Processing System in a production environment to support the implementation phase of the ATDs.	Achieved the objective of having all components of NAIS operational.
August 14, 2007	Signed a cooperative agreement with Kansas State University to lead a university consortium to conduct a Benefit Cost Analysis on the NAIS.	Final report expected July/August 2008.
August 2007	Approved the 8th AIN device for individual animal identification, including two ISO compliant injectable transponders.	Equine Species Working Group recommended ISO compliant RFID injectable transponders for standarization of ID methods.
October 2, 2007	Signed 6th Cooperative Agreement with industry organizations to work with States to advance premises registration	Established Industry Cooperator Working Group with participating organizations.

Timelines and Outcomes

As noted in this report, advancing traceability is achieved through the implementation of several key strategies and numerous actions. The actions are being implemented through defined target dates to reflect the prioritization given to each species with a primary objective of strengthening existing programs. This approach effectively uses existing infrastructure and provides more cost-effective solutions. The strategies are defined in the following chart, along with timelines for many of the established actions.

Summary of Strategies and Actions

Timelines and Species Most Affected ■ High Priority ■ Medium Priority ■ Low Priority		Beef	Dairy	Horses[2]	Poultry	Sheep	Goats	Swine
	Action Target Date	Species Most Affected By Action						
1. Prioritize NAIS Implementation by Species/Sectors								
Establish Tier 1 and Tier 2 Species	Dec. 2007	•	•	•	•	•	•	•
Prioritize sectors within each species	Dec. 2007	•	•	•	•	•	•	•
Finalize species/sector traceability short-term objectives and strategies	Dec. 2007	•	•	•	•	•	•	•
2. Harmonize Animal Identification Programs								
Domestic Programs: Standardize ID requirements across Federal, State and Industry Programs and Initiatives								
▪ Breed Registries and Performance Recording Programs								
o Breed Registries – Initiate use of AIN in breed registry programs	March 2008	•	•	•		•	•	
o Dairy Industry – Incorporate PIN in Dairy Herd Improvement Association's administration of the National Uniform Eartagging Numbering system	March 2009	•	•	•		•	•	
▪ Industry Alliances	March 2008	•	•					
▪ AMS – Define and utilize NAIS standards applicable to QSA programs	Oct. 2008	•	•					
International								
▪ Unify import/export animal identfication standards and criteria	March 2009	•	•	•				
3. Converge NAIS Data Standards in Disease Programs and Regulations								
Establish Uniform Data Standards								

[2] Horses: Competition horses (race and show)

Timelines and Species Most Affected ■ High Priority ■ Medium Priority ■ Low Priority	Action Target Date	Beef	Dairy	Horses[2]	Poultry	Sheep	Goats	Swine
		Species Most Affected By Action						
▪ Establish the 7-character premises identification number (PIN) as the national location identifier standard (Proposed Rule)	Jan. 2009	•	•	•	•	•	•	•
▪ Establish the "840" AIN as the single version for the Animal Identification Numbering system (Proposed Rule)	Jan. 2009	•	•	•				
Utilization of Standards with Disease Programs								
▪ Establish regulation using the PIN for all premises importing and exporting livestock	Jan. 2009	•	•	•	•	•	•	•
▪ Establish policy using PIN for all animal health programs	Oct. 2008	•	•	•	•	•	•	•
▪ Establish policy to use PIN for origin and destination premises on the ICVI	Jan. 2009	•	•	•	•	•	•	•
4. Integrate Automated Data Capture Technologies with Disease Programs								
Develop and implement electronic data collections systems for disease programs								
▪ Develop and implement Electronic Bangs Vaccination and Testing Systems	July 2008	•	•					
▪ Develop and implement expanded use of the use of the electronic TB Testing System	Jan. 2008	•	•					
▪ Develop and implement the eIVCI nationwide	Oct. 2008	•	•	•				
5. Partner with States, Tribes and Territories								
Ulize Traceability Business Plan as a blueprint to support work plans for FY08 cooperative agreements with States, Tribes and Territories.	Jan. 2008	•	•	•	•	•	•	•
▪ Continue to provide performance based cooperative agreements with States and adjust the FY08 criteria to allow flexiblity to advance traceability priorities at the state/regional level.	Jan. 2008	•	•	•	•	•	•	•
6. Collaborate with Industry								
NAIS Subcommittee and Species Working Groups								
▪ Receive updated reports from species working groups	Aug. 2008	•	•	•	•	•	•	•
▪ Consolidate report from NAIS Subcommittee	Oct. 2008	•	•	•	•	•	•	•
Support Industry Leadership Efforts								
▪ Establish premises registration cooperative agreements with non-profit industry organizations	July 07 – Dec. 08	•	•	•	•	•	•	•
Accredited Veterinarians								
▪ Develop and implement communication program	Oct. 2007	•	•	•	•	•	•	•
▪ Provide large-animal veterinarian accreditation training module	March 2008	•	•	•	•	•	•	•
Markets/Auction Barns								

Timelines and Species Most Affected ■ High Priority ■ Medium Priority ■ Low Priority	Action Target Date	Beef	Dairy	Horses[2]	Poultry	Sheep	Goats	Swine
		Species Most Affected By Action						
▪ Evaluate and define opportunities to register market locations	July 2008	•	•			•	•	
▪ Work with market/auction barn managers to address concerns associated with the collection of animal identification at markets	Ongoing	•	•			•	•	
Harvest Facilities								
▪ Receive and consider recommendations from Packer/Render WG	Nov. 2007	•	•			•	•	•
▪ Define strategies for collecting animal termination records	July 2008	•	•			•	•	•
Brand Inspection States								
▪ Support Brand State WG efforts to define options to establish interoperatbility between brand systems and animal disease programs	March 2007 – Nov 2007	•	•					
▪ Receive and consider recommendations from Brand State WG	Jan. 2008	•	•					
7. Advancement of Identification Technologies								
Performance Standards								
▪ Establish performance standards for RFID animal identification devices through a stakeholder effort facilitated by AMST (Draft)	Dec. 2008	•	•					
Emerging technologies								
▪ Evaluate advancing technologies to improve collection of animal identificaiton in various environments ▪ Establish a process to facilitate the transition to market-ready, evolving technologies	Dec. 2008	•	•	•		•	•	•

Key Outcomes

The resulting outcomes will provide increased traceability capability. The "case studies" examples and ongoing desk top exercises will be used to monitor progress being made toward the following desired outcomes. The table below identifies traceability objectives, key benchmarks, and target dates for meeting those objectives by species/sector.

Species / Sector	Traceability Objectives and Target Dates		Key Benchmarks
Cattle Beef and Dairy Breeding Herds	Ability to identify 70% of breeding animals to their premises of origin	Dec. 2009	Beef: Obtain premises registration of operations that account for 70% of the beef population. Dairy: Obtain > 95% premises registration of the state licensed dairies. Obtain >90% of heifer raising operations.
Equine Competitive horse industry	Ability to identify 90% of sport (competition) horses to their premises (base farm or stable operation).	Jan. 2009	Implementation of the 840 AIN RFID technology by all industry organizations that provide services to the sport (competition) horse owners/breeders.
Poultry Commercial Poultry Industry	Ability to have access to 98% of the premises commercial poultry premises information in a defined zone of a disease event in less that 48 hours of detection.	March 2008	Obtain near 100% premises locations recorded and readily available through cooperative efforts of the National Poultry Improvement Plan.
Sheep and Goats Breeding flocks	Ability to identify and determine the birth premises for 90% of the breeding animals within 48 hours of a disease event	Dec. 2009	The goal of the Sheep and Goat sector is to achieve 90% of the producers assigned a flock identification number through the scrapie eradication program with all flock numbers cross-referenced with a standardized PIN.
Swine Commercial swine	Ability to identify and determine the last production premises for 90% of the feeder pigs within 48 hours of a disease event	March 2009	The primary goal for the swine sector through the leadership of the National Pork Bard is to achieve 100% registration of commercial swine premises by late 2008.

Achieving optimal traceability will be most challenging for the cattle industry. The outcomes noted above for the cattle industry represent a huge incremental step in advancing traceability for this large and very diverse industry. The infrastructure resulting from these strategies will enable the cattle industry to make continued progress towards the ultimate 48-hour traceability goal.

Critical Location Points

Premises registration of locations that facilitate the marketing of animals, including ports of entry and other import/export facilities, harvest facilities are critical control points relative to successful animal disease traceability. Therefore, high participation in the premises registration component of these locations are targeted in the traceability business plan. Existing disease control programs and industry-specific initiatives can be leveraged more effectively to improve overall traceability as these locations obtain the standardized PIN to support the recording of animal movements.

The following table lists several of the critical location points that are priority for premises registration. As noted, a high level of premises registration is targeted for these locations.

Type of Location	Total Estimate	Goal	Date	Comments
Exhibitions and Sporting Venues				
County and State Fairs, Racetracks	2750	>90%	Sept. 2009	State, Regional and National exhibitions
Import/Export Facilities				
Import Quarantine Stations	3	100%	July 2008	Air and Sea
Export Inspection Facilities	30	100%	Oct. 2008	
Ports of Entry	65	100%	Jan. 2008	35—Canada & Mexico, 27—Limited Ports
Markets & Dealers				
Public Auctions (Federal Licensed)	1400	70%	Oct. 2009	
Dealers with Facilities	1988	70%	Oct. 2009	
Harvest Faclities				
Renderers (3D/4D Plants)	155	100%	July 2008	
Slaughter Plants				
• Federal Inspected	826	100%	July 2008	
• Non-federal Inspected	2116	>90%	Jan. 2009	
Semen Collection and Embryo Transfer Facilities				
Commercial Units	22	100%	Oct. 2008	
Custom Collection	12	100%	Jan. 2009	
Veterinary Clinics (Large Animal Practices that receive livestock)	8000	>90%	Oct. 2008	It is estimated that approximately two-thirds large animal veterinarians have clinics that receive animals
Licensed Food Waste Swine Feeding Operations	880	100%	Oct. 2008	

Conclusion

The vision and long-term goal for NAIS is 48-hour animal disease traceability. Of course, the ability of each industry segment to achieve this goal is dependent on its complexity and specific factors—for example, the size, diversity, disease status, and management systems involved. The allocation of resources as outlined in this business plan provides direction and focus as to where the greatest value for the advancement of traceability will result.

Industries will face new animal health demands as the animal agriculture industry changes and as new disease concerns arise. Technology advancements will also impact how livestock are managed, providing improved means of administering animal disease programs. Therefore, strategies to advance traceability will continue to be evaluated and adjusted to ensure that continued progress is made toward achieving the optimum goal of 48-hour traceback—in a timely, cost effective, and efficient manner.

Appendix 1

VS Animal Health Information Systems

Animal Health and Surveillance Management (AHSM)

Description and Use

The AHSM is the data management system for the following VS disease surveillance, eradication, and control programs: brucellosis, tuberculosis, pseudorabies, Johne's, classical swine fever, avian influenza, chronic wasting disease, bovine spongiform encephalopathy and scrapie. The AHSM is made available for States to utilize, and all States are using the AHSM for at least one program.

All program-required testing, inspection and certification data can be stored in the AHSM. Investigation data of infected animals and herds/flocks, related to the specified programs, are also managed in the AHSM. The AHSM has three modules (program and surveillance management, subject management and incident/case management) and several tools or integrated processes (mobile computing applications, mapping, laboratory sample submission and national reporting).

The AHSM is the fourth generation information system developed for the information management of these programs; VS is currently transitioning from the third generation information system ("Generic Data Base") to AHSM. Brucellosis, tuberculosis, pseudorabies, and Johne's have not yet been redeveloped in the AHSM. The 1st generation system was deployed in the late 1970s.

The AHSM can be used for summary data management and reporting or full detail data and program management. The system users are primarily Veterinary Services and State cooperators. The system is used at the local level for operational program management and reporting, at the regional level for regional program management, and at the national level for program evaluation and analysis.

Size

The AHSM has multiple State data schemas (configurations), each storing data for up to 10 programs; program data as far back as 1977 resides in this system. There are millions of records stored in this system.

Emergency Management System (EMRS)

Description and Use

The EMRS is used for recording all foreign animal disease investigations and incident management. The EMRS is also used in disease outbreak situations such as exotic Newcastle disease (END) in 2003-2004. The EMRS will be the data management system if avian influenza enters the United States. The EMRS has three modules (administration, investigation, tasking). The administration module includes deployment, check-in, check-out, and equipment tracking functions. The investigation module manages all aspects of an outbreak, including premises assessment and status, depopulation, cleaning and disinfection, appraisal, and indemnity. Several tools/processes, such as mapping and laboratory submission are also included in the EMRS.

System users are primarily Veterinary Services and State animal health officials; other users include other agency staffs assigned to an incident. The system provides full incident management functionality and is used for reporting to international animal health organizations.

The EMRS is a 1st generation information system, initially deployed in 2002. An integration of EMRS and USDA's Resource Ordering and Status System (ROSS) is in the analysis phase. Additional integration/data sharing with other Federal emergency response systems is being explored.

Size

The EMRS stores all data related to foreign animal disease investigations; there are several hundred investigations per year. The database created during the END outbreak in 2003/4 contains about 90,000 premises records and 225,000 investigation records.

Veterinary Services Process Streamlining (VSPS)

Description and Use

The VSPS is the data management system for VS' import, export, and interstate movement certificates, and veterinary accreditation programs. All program-required movement certificate and permitting data can be stored in the VSPS. The VSPS has five modules (Import Tracking, Export Health Certification, e-Interstate, e-Veterinary Accreditation, Humane Transport), and an e-movement sub-module for the export of poultry and hatching eggs. The VSPS integrates with the User Fee System for billing services.

The VSPS is a second generation information system developed for management of federally regulated animal and animal product movement. VS is currently transitioning from the 1st generation system to VSPS. Import Tracking and Export Health Certification have not yet been redeveloped in the VSPS information system. The 1st generation system was deployed in the early 1990s. The integration of VSPS and the International Trade Data System (ITDS) is in the analysis phase.

The VSPS is used for all international movement certificates and accredited veterinarian program and may be used for interstate movement certificates. All federally regulated international animal and animal product movements are stored in the VSPS. The system users are primarily VS (all modules), accredited veterinarians (e-Veterinary Accreditation and e-Interstate modules), state animal health officials (e-Interstate) and import/export brokers (Import Tracking and Export Health Certification). The data stored in the VSPS is used for program management, infected animal investigations, risk analysis and various reports to other federal agencies and industry groups.

Size

The VSPS stores all import and export data of VS-regulated species and commodities since 1996, accounting for hundreds of thousands of movement records representing millions of animal movements. The e-Veterinary Accreditation module manages records for approximately 60,000 private veterinarians who have been accredited for Federal work.

National Animal Identification System (NAIS)

USDA has developed premises registration systems, including the Standardized Premises Registration System (SPRS), the National Premises Information Repository (NPIR), and the Premises Number Allocator. In addition, APHIS has evaluated Compliant Premises Registration Systems using standardized interfaces that are maintained and operated entirely at the discretion of the State using such systems. To support the animal identification component, USDA has developed the Animal Identification Number Management System (AINMS) to record the allocation of AINs to a premises.

Animal movement records will be maintained in private and State Animal Tracking Databases (ATDs). USDA APHIS developed the Animal Trace Processing System (ATPS) that animal health officials will use when initiating a response to an animal health event.

The AHSM, EMRS, and VSPS are currently integrated with the NAIS, or are in the process of being integrated.

National Premises Information Repository (NPIR)

Description and Use

USDA/APHIS maintains the NPIR, which became operational in mid- 2004. As noted by its name, the NPIR centralizes the data elements received from the States' premises registration systems. This enables all VS systems to efficiently and effectively integrate with one "master" data set when animal health officials need to use premises information. Each day, information from each State premises registration system is updated to the NPIR.

A real-time subset of all Premises Registration Systems is necessary to support other systems in the NAIS as well as VS' other animal health systems. For example, when a PIN is received from an Animal Tracking Database as a result of a disease investigation query, the contact information and other pertinent premises information is instantly available from NPIR. The NPIR also supports the allocation of animal identification numbers (AINs) to a premises by providing AIN tag managers and resellers the ability to verify that a producer has a valid PIN before distributing AINs to that producer (a valid PIN is a perquisite of using AIN tags).

Statistics (total premises registered, premises registration by State, etc.) on premises registration are also being generated from the NPIR.

Size

States and Tribes have registered approximately 350,000 premises of the estimated 1.4 million national premises. For each record (premises registered), 12 data elements are stored on the NPIR.

Standardized Premises Registration System (SPRS)

Description and Use

The SPRS is a web-based application that allows States and Tribes to register a location and assign it a nationally unique identification number or Premises Registration Number (PIN). The SPRS interfaces with the National Premises Information Repository (NPIR) through the Premises Number Allocator (Allocator) using Application Program Interface (API) calls. Premises data in the SPRS is accessible only to the State or Tribe that registers that location. A subset of that data is stored in the NPIR to ensure that each location registered is assigned a unique identification number.

The SPRS is the most mature NAIS application. As it continues to be enhanced, an increasing amount of pressure is applied to the system. For example, the user base for this component of the NAIS continues to grow. Almost daily, more and more users are employing the system, which requires an increase in the hours supported and the number of integrated locations. The original SPRS was adapted from an existing custom software package designed and developed for use in a single State through a federally funded cooperative agreement with the Wisconsin Livestock Identification Consortium. Modifications to the database were necessary to accommodate the use of the software in over 40 States plus multiple Territories and Tribal Nations. The modifications have not been made in a consolidated fashion. In 2007, the back end data structure and service layer will be re-written to bring it into the same Java 2 Enterprise Edition (J2EE) architecture as the other Java applications owned and operated by APHIS-VS. This will improve performance, reliability, and data structures for the SPRS.

The SPRS is provided at no direct cost to each State and Tribe wishing to use it. States can utilize this application to support varying requirements to support premises registration in their respective States while meeting the standards established for national compatibility.

Size

USDA APHIS provides the SPRS to approximately 40 States, numerous Tribes, and 2 Territories. Assuming 80 percent of the records from the NPIR will be on the SPRS when full participation is achieved, the projected total of records is expected to be approximately one million records.

Compliant Premises Registration System (CPRS)

Description and Use

The CPRSs are premises registration systems that are maintained entirely by the state, including development and operational cost. The established data standards are used for premises registration, thus the systems are compatible with the national standards. Additionally, the CPRSs are interfaced with the Premises Number Allocator and submit data to the NPIR.

Animal Identification Number Management System (AINMS)

Description and Use

The AIN Management System (AINMS) is a web-based application used to record the allocation of Animal Identification Numbers (AINs) to approved AIN device manufacturers.

AIN device manufacturers, managers, and resellers must access AINM through USDA's eAuthentication system. The eAuthentication is an identity verification system used to grant access to multiple USDA online applications.

The AINMS was developed to record the distribution information from manufacturers, managers, and resellers (1) when an AIN was allocated to a manufacturer, (2) when an AIN was imprinted on a device/tag, (3) when the AIN device/tag was shipped to a reseller or manager, and (4) when and where the AIN device/tag was shipped to a producer.

Size

The number of AINs allocated as of August 1, 2007 was approximately 2 million. If in the future all new animals are to be individually identified and tagged, approximately 35 million AINs may be allocated per year.

Animal Trace Processing System (ATPS)

Description and Use

USDA APHIS, through an interim/development phase, developed the ATPS that animal health officials will use when initiating a response to an animal health event. The system puts in place the communication and messaging process between the private and State animal tracking databases (ATDs) and the ATPS to ensure the animal movement information is provided to the animal health official in a timely manner. However, State and Federal animal health officials will not have direct access to the systems, thus maintaining a clear disconnect to government access to the data.

The ATPS provides the information technology platform for security, electronic data transfer, and auditing processes. Additionally, the ATPS integrates other relevant data from the animal health databases managed by APHIS Veterinary Services.

The ATPS uses a service-oriented architecture using web services to provide the communication methods with the private and State databases. A monitoring/auditing

application will look at daily communications to determine, for example, if a system or systems are not responding. The monitoring/auditing application will then notify support personnel. The application will also monitor to ensure that only authorized users are accessing the system.

The ATPS will enable Federal and State animal health officials to submit requests for information to the animal tracking databases (ATDs) when investigating an animal disease events in the following situations:

- An indication (suspect, presumptive positive, etc.) or confirmed positive test of a foreign animal disease;
- An animal disease emergency as determined by the Secretary of Agriculture and/or State Departments of Agriculture; or,
- A need to conduct a traceback/traceforward to determine the origin of infection for a program disease (brucellosis, tuberculosis, etc.).

USDA deployed the ATPS in March 2007 and is working with private and State ATDs in the implementation phase.

Animal Tracking Databases (ATDS)

Description and Use

ATDs are external to USDA's information system architecture as aimal movement records are maintained in private and State ATDs, allowing the tracing of animal movement records from one production premises to another. The organization may use systems that maintain animal movement for purposes other than supporting the NAIS. In such cases, users of those systems may vary. Specific to the animal movement data for the NAIS, the ATPS commuicates with the ATDs through a messaging architecture. Thus, there are no direct State or Federal users on those systems. Rather, the animal health officials have access to the ATPS, and the ATDs provide the information to that system.

Producers who utilize ATDs have the option of preventing certain information about their animals, including animal movement information, from being provided to USDA. In essence, these producers may be able to impose confidentiality restrictions on their information contained in private ATDs.

Appendix 2

Case Studies – Recent Animal Disease Investigations

Cattle

Bovine Spongiform Encephalopathy (BSE)	
2003	
Incident:	The first diagnosis of BSE, a foreign animal disease, in the United States occurred on December 23, 2003.
Investigative Summary:	The case originated from a Canadian cow imported into the United States as part of a shipment of 81 cows. Of the 81 animals imported, only 29 could be definitively identified and located using producer and available animal movement records, leaving 52 animals unaccountable. 255 animals from 10 different herds were destroyed as a result of the traceback investigation. The duration of the investigation was 46 days.
Impact:	Foreign beef trade was halted immediately. Projected losses to the beef industry range from $2 billion to $4 billion. Beef trade volume in 2007 still not restored to pre-BSE levels.
2005	
Incident:	Confirmed positive of a previously inconclusive BSE sample from a 12-year-old Texas cow was made on June 24, 2005.
Investigative Summary:	Of the 200 cows associated with the index herd, 56 of those animals were untraceable. The total investigation involved 1,919 animals from 8 different herds. The duration of the investigation was 61 days.
Impact:	Continued drain on beef export potential.
2006	
Incident:	Confirmed positive of a previously inconclusive BSE sample from a 10-year-old Alabama cow was made on March 15, 2006.
Investigative Summary:	Positive cow had no tattoo, no ear tag, and no brand. Thirty-seven farms were investigated (involving the use of DNA), to potentially identify a herd of origin. Investigation took 48 days to complete. A source herd was never identified due to the lack of individual identification and associated records of animal movement.
Impact:	Inability to demonstrate to global trading partners capability of providing traceback information.

Bovine Tuberculosis	
2004	
Incident:	Tuberculosis outbreak in California dairies from May 2002 through

	June 2004
Investigative Summary:	Original herd involved 3,500 milking cows, of which 38 head were culture-positive. Animals originated from five additional States beyond CA. Depopulated in November 2002. Second herd involved 1,989 dairy cows diagnosed with tuberculosis on October 16, 2002; depopulated in March 2003. Animals were sourced from 33 States beyond CA. Third herd involved 408 animals with a diagnosis of 17 positives in December 2002; depopulated in April 2003. Source animals came from 22 States beyond CA. A fourth tuberculosis investigation in 2004 involved a dairy backgrounding facility that extended to additional facilities in AZ, NM, KS, IA, and WI.
Impact:	875,616 dairy animals from 687 herds--including all dairies in Tulare, Kings, and Fresno counties--had to be tested for tuberculosis. Approximately 13,000 animals were sacrificed to contain the disease. Quarantine of the second dairy herd cost the individual owner $70,000 per month alone in lost income. Well documented that tuberculosis is a disease of national scope. Movements across State lines should require additional testing requirements along with official individual identification.
2005-Present	
Incident:	Using slaughter surveillance from adult cow processing in Wisconsin, the index herd diagnosed with bovine tuberculosis was identified in February, 2005. Traceback to Minnesota was confirmed using animal identification combined with DNA analysis taken from backtag sample. Since then, seven herds have been identified as infected with tuberculosis and additional testing and monitoring continues in the eradication effort.
Investigative Summary:	The index herd was established in 1972, representing 33 years of effort. 585 head of commercial and registered cattle were depopulated, finding up to 25 suspect and positive animals. Four fenceline herds existed and traces went to 7 additional States. A second, 100 year-old neighboring family farm was depopulated of 352 cattle, finding lesioned 12-14 year-old cows along with a 5 year-old purchased bull with lesions. The purchased bull had previously crossed the fence to access heifers of the index herd. Herd 3 was a family farm of 307 beef cattle. Herd 4 was depopulated of 200 cows exposed from commingling. Herd 5 possessed an infected 10 year-old cow along with visible lesions in 2, 10 month-old bull calves and involved a commingled herd of 600 head owned by 3 different owners from MN and SD. Herd 6 was a small family farm of 36 head of commingled cattle. Herd 7 represented both dairy and beef cattle using purchased bulls. 5 lesioned deer were detected, all within 5 miles of the index herd.

Impact:	Chronic diseases of concern such as tuberculosis can be difficult to investigate and eradicate without maintaining long-standing records of animal movement activity. Accurate information regarding animal movement activity is key to determining the spread of disease. Without it, investigations can be prolonged, resulting in additional potential exposures and costs. In this MN situation alone, $3.9M has been paid in indemnity and USDA has incurred costs exceeding $5M for investigation and heightened surveillance. Costs to producers for testing that is not yet complete is currently close to $1M and over 3,500 animals have been depopulated. This MN occurrence also clearly demonstrates that small family farms are as potentially susceptible to disease outbreaks as are larger farms.
2007	
Incident:	Tuberculosis was diagnosed in a large dairy herd of approximately 11,000 head housed on two locations in NM.
Investigative Summary:	In an ongoing investigation of just over 10 weeks in duration, epidemiologists have determined that 453 traces were necessary to trace the disease. As of October 17, 2007, 96 traces remain to be completed. 20,150 animals have been tested for the disease in 16 NM herds. NAIS-approved RFID eartags are being used for unique individual identification of all animals in each of the 16 herds being evaluated. Additionally, mobile information management systems (MIMS) devices are being used to record and capture identification information electronically.
Impact:	$35M of Federal funding was allocated for indemnification to eradicate this outbreak of bovine tuberculosis. Sheer size of the infected herd and potentially exposed herds has required teams of 14 State and Federal personnel rotating every 3 weeks to investigate the disease. Use of RFID and MIMS technologies in this effort has increased the accuracy of recording test information as electronic capture of identification information can be easily reconciled and transferred to official test forms. Animals can be electronically identified when loaded to accurately populate restricted movement permits and indemnity forms. More animals can be tested and accurately recorded expediting the investigation effort. Additionally, animal safety and human safety in managing the animals is enhanced with electronic identification.

Bovine Brucellosis	
2007	
Incident:	On May 9, 2007, the APHIS/VS National Veterinary Services Laboratory confirmed a positive finding for bovine brucellosis associated with a beef cow from Montana. The positive animal was from a herd of 200 head that were assembled in November, 2005 from a source herd in Wyoming.
Investigative Summary:	The index cow was associated in the movement of animals from the source herd. The cow aborted in December, 2005 and again late in 2006. The positive sample was not taken to diagnose the abortion, but was part of a routine disease testing requirement for a potential out-of-state buyer, even though the State of Montana was a brucellosis free State. 396 head from the index herd were depopulated. Tracebacks as well as traceforwards involved approximately 900 animals. 16 States were involved in this investigation.
Impact:	MT relies primarily on brand laws to trace cattle. The lack of unique individual animal identification has complicated the investigation. In one situation, 2 heifers identified only by brand could have moved to 6 different locations. The lack of unique individual identification meant that 6 locations had to be involved in testing rather than 1 or 2. Another situation involved moving 2 animals that were purchased and mixed with 60 head. The additional 60 head had to be traced rather than just the 2 in question due to the lack of unique individual animal identification. As many as 6 different brands were identified on a single cow. In reviewing the records, none of the brands are connected with points in time. As of October 17, 2007, 157 days have elapsed in this continuing investigation. There are 15 animal movement events that are still outstanding and may never be definitively traced due to a lack of unique individual animal identification. This investigation also clearly indicates the significant number of animals that can move in, move out, and be commingled from one herd in less than two years time. The lack of animal movement information has prolonged the time and cost of the disease investigation.

Swine

Porcine Pseudorabies	
2007	
Incident:	Outbreak in Wisconsin in April 2007
Investigative Summary:	Outbreak involved high biosecurity risk swine facilities. Owner did not have written records, relying only on memory as to distribution of potentially infected animals. At least 20 other owners received animals from the index herd; several did not possess a premises identification number in a State with mandatory premises registration. Index herd owner had loaned a boar to a facility which additionally houses "Eurasian" or wild boar animals. When returned, the animal was positive for pseudorabies. Original animals obtained 6-10 years ago.
Impact:	Wisconsin is a significant pork producing State, and its status regarding pseudorabies eradication was jeopardized. Loss of status would require additional testing requirements in addition to lost marketing opportunities. Transitional swine facilities, those that maintain domestic swine with direct or indirect exposure to free-roaming swine populations, increase the risk of disease transmission as well as status of State disease programs, affecting all commercial swine facilities.

Poultry

Exotic Newcastle Disease (END)	
2002-2003	
Incident:	Outbreak of exotic Newcastle disease, a foreign animal disease of poultry, in California from September 2002 until September 2003.
Investigative Summary:	A small animal veterinarian in Los Angeles county submitted a sample from dead birds in a flock of backyard game fowl. END was confirmed on October 1, 2002. Disease spread occurred in exhibition and cockfighting flocks; eventually, positive cases also occurred in commercial facilities. Nineteen counties were quarantined in CA, NV, AZ, NM, and TX. Nearly 4.5 million birds from over 2,700 infected premises were sacrificed to contain the disease; a second strain of the disease was also diagnosed in western TX. More than 85,000 premises maintaining susceptible bird populations were identified during this investigation. Up to 1,600 personnel were deployed for 350 days to respond to the outbreak. Because a majority of at-risk birds were raised in cluttered and dense environments, the detection, depopulation, cleaning, and disinfection effort were extremely resource intensive. 96 percent of all operations investigated were backyard premises.
Impact:	57 countries and Guam imposed some form of trade restriction against poultry exports from the United States, with an estimated $395 million loss in direct and indirect trade. Federal dollars allocated to the eradication effort were estimated at $138.9 million.

Low Pathogenic Avian Influenza **(LPAI)**

2007	
Incident:	On July 7, 2007, APHIS/VS National Veterinary Services Laboratory confirmed low pathogenic avian influenza in a commercial turkey farm. The sample was taken as part of an active pre-harvest serology surveillance component of the National Poultry Improvement Plan (NPIP) U. S. Avian Influenza Clean Program. The turkeys did not demonstrate any clinical signs of sickness or disease.
Investigative Summary:	Total number of turkeys on the farm was 54,000. All birds were depopulated and composted on the farm. Enhanced surveillance was implemented in a 17 county Shenandoah Valley poultry producing region. There were 5 commercial flocks within 2 miles of the index flock; 42 commercial flocks within 6.2 miles; 32 high risk contacts identified; and 34 backyard clocks within 6 miles. From July 7, 2007 through August 19, 2007, 16,793 samples were subsequently tested and determined to be negative.
Impact:	On July 7, 2007, all public sales, shows, and exhibitions of live poultry throughout the State of Virginia were cancelled. Land application of poultry litter, manure, or bedding in the 17 affected counties was prohibited. Both bans were in effect through July 30, 2007. Poultry imports from VA were immediately banned in China, Cuba, Japan, Philippines, Russia, Taiwan, and Hong Kong. Poultry imports from the entire U. S. were banned immediately by India and Indonesia. Some product shipped after June 20, 2007 was destroyed and some countries did not restore trade until October 12, 2007. The proximity of several susceptible flocks, both commercial and backyard, to the index flock in this case exhibits the importance of premises identification for contacting premises owners and implementing effective and efficient disease control procedures for maintaining markets and minimizing disease impacts.

Equine

Equine Viral Arteritis (EVA)	
2006	
Incident:	Outbreak of EVA on New Mexico equine breeding facility in June 2006
Investigative Summary:	With up to 50 percent of early term abortions in broodmares, the index farm in New Mexico initially evaluated 26 blood samples for the presence of the virus; 24 were positive. Additionally, breeding stallions were positive for the virus. Within a short time, all 200 plus broodmares and all 4 stallions were positive for viral antibodies. Due to the interstate movement of resident animals, return movement of broodmares brought to the facility for breeding, and the transport of fresh and frozen semen, 18 additional States were involved in the disease investigation. Sixty-nine direct exposures were identified, with 69.5 percent associated with mares inseminated with shipped semen and 29 percent associated with mares and foals that had visited the index premises during the timeframe in question. In one destination State alone, over 591 horses from 21 different premises were quarantined.

Impact:	Multiple owners from several States were severely restricted in their ability to manage their equine operations. More importantly, the rapid spread of the virus to many States substantially increased the risk of the disease status nationally in an extremely short period of time. The use of assisted reproductive technologies, and the associated transport of semen and embryos, also was demonstrated in this case to increase the risk of animal disease transmission.

Appendix 3

NAIS Pilot Projects and Field Trials

Sixteen pilot projects were supported by Federal Commodity Credit Corporation (CCC) funds from the initial National Animal Identification System (NAIS) implementation effort in fiscal year (FY) 2004. Collectively, the 16 initial projects represented the first stage of the NAIS pilot project program. This program supports the States and Tribes, who play a lead role in the administration of NAIS, in carrying out field trials and research projects that resolve questions and concerns about NAIS processes, technologies, and costs. Approximately $6.6 million was spent to carry out these projects, representing slightly more than 50 percent of funds made available for NAIS through the CCC in FY 2004. This figure accounts for less than 6 percent of the total funding ($118 million) USDA has received for NAIS to date.

The results of these projects have significant merit with regard to NAIS implementation. Most importantly, the projects showed that animal identification and tracing can be implemented successfully in a production environment. The projects gave stakeholders "hands-on" experience using identification technologies and, as a result, delivered practical solutions for their routine use. In fact, many of the projects tested the technology in real-world scenarios, integrating animal identification and movement reporting into everyday commerce. These efforts have provided critical information and, in some cases, documented data about the day-to-day use of animal identification and tracing technology.

For example, the project results demonstrate successful advancements in automated data capture, which is essential for animal identification and tracing to function effectively in commercial production environments. Demonstrations conducted early on in the projects produced only 50-60 percent read rates (percent of animals whose identification code was recorded) when using low-frequency RFID. Project coordinators identified a variety of issues that affect the effectiveness of tags and scanners (data capture) in real-world scenarios. These include the read range of the scanner, the readability of tags, the location where the scanning takes place, and any interference from existing structures and other factors. After studying these issues and identifying practical solutions, many of the final project summaries now report read rates of 90-99 percent. This drastic improvement was a direct result of the continued evaluation, trial and error that occurred throughout the pilot projects. The initial pilot projects produced a number of valuable lessons learned and other key findings. An overview of these results is provided below.

Key lessons learned are provided in the following section. The full report is posted on the NAIS Website.

Lessons Learned

- *The retention rate of RFID button-button tags is significantly higher than anticipated.* In the Southwest pilot project, a producer with 6,000 tagged animals reported a retention rate of nearly 100 percent, compared with a 96-98 percent rate for visual tags. Other participating producers found similarly high retention rates with properly-placed RFID tags.

- *The use of RFID at the auction market can reduce the need to restrain animals when recording their individual ID numbers.* The Minnesota project concluded that RFID technology in this environment can actually improve animal and human safety.

- *Using the group/lot method of animal identification can significantly reduce a major barrier for producers to participate in NAIS.* In the Northwest region, groups of animals are often moved and managed together in situations where uniquely identifying them is virtually

impossible without causing a serious and often detrimental change in the way business is conducted. The Northwest pilot project found that group/lot animal identification mirrors the natural flow of commerce in this region. The project concluded that group/lot identification is an important option for western cattle operations, but also acknowledged that individual identification is necessary if animals are commingled with cattle from other premises.

- *RFID technology is not a "plug-and-play" application and must be customized to individual locations—the needs of which vary tremendously.* In the Texas pilot project, the sites chosen for testing were often ill-suited for immediate installation of equipment and required a time-intensive process of site surveys and collaboration with facility owners to prevent any interference with the natural flow of commerce. Several facilities in the Southwest pilot project also required modifications (i.e., retrofitting existing facilities) to resolve interference problems with the panel readers. Overall, the majority of projects reported that the RFID/reader technology required careful setup, calibration, modification, and use.

- *Proper tag application and placement has a direct and significant impact on the retention and readability of the tags.* The Kentucky pilot project shows that RFID ear tag application and placement alone can account for as much as 40 percent of the variation in read rates and retention.

- *In certain environments, the automated recording of animals' identification as they are loaded onto and off-loaded from trucks is critical for successful animal tracing.* While RFID technology is promising to achieve this goal, the Kansas pilot project found that improvements and advancements in the technology are still needed to make the "on-board" RFID systems more rugged. The project found that the available hardware/software needs to be refined to require less human intervention. In addition, it is important for service providers to be fully integrated (share information across systems), to ensure that checks and balances can be programmed as needed in the transportation environment.

- *Animal identification number (AIN) radio frequency (RF) eartags used for NAIS can also support value-added opportunities.* Florida's pilot project demonstrated the market-driven benefits of electronic animal identification and tracing. In one segment of the project, 6,500 individually identified cattle qualified as source-verified beef and yielded monetary premiums (totaling $56,000) during an industry-sponsored heifer sale. In another segment of the project, the Seminole Tribe also realized market-driven benefits when calves with electronic identification garnered premium amounts in a video auction sale.

- *Information collection for NAIS can be achieved effectively through programs producers are already engaged in for management and/or marketing.* For example, the Pennsylvania project built upon the existing infrastructure of the national Dairy Herd Improvement (DHI) program. The DHI system proved to be an effective partner in collecting data for NAIS data collection, and did so in a producer-friendly manner by using systems already in place and utilized by many producers. The Northwest Pilot Project also found that producers are most eager to participate in animal identification and tracing when existing systems are utilized for data collection.

- *Producers' access to technology—or lack thereof—is a key factor impacting participation in animal identification and tracing systems.* The Southeastern Network Pilot Project found that only approximately 15 percent of producers involved in the project had internet access and used e-mail. The Northwest Pilot Project also found that many producers do not have convenient access to technology, or were not comfortable using the technology. Results from both projects highlight the need for non-electronic data collection methods requiring minimal action on the part of producers.

- *Buy-in for animal identification and tracing must extend beyond producers to include others involved in the production chain.* In several projects, data collection was hindered because individuals in key industry segments (i.e., auction markets, slaughter facilities, and commercial

transporters) lacked understanding of the technology and basic procedures involved with animal identification and tracing systems. During the Minnesota pilot project, the participating slaughter facility did not report equipment failures to State officials or manufacturers because the problems did not interfere with the facility's own operations. Such results demonstrate that outreach, education, and market incentives will be especially important within these groups to achieve the animal tracing goals of NAIS.

- *The cost-effectiveness of LF-RFID must be evaluated according to species.* The Montana pilot project found that individually identifying all animals in a sheep production system would be too expensive unless it could create value-added benefits. A subsequent project is now being conducted to evaluate the potential use of group lot ID systems within sheep marketing channels.

- *Participants at all levels of production need to be well-informed about basic procedural matters related to animal identification.* The North Dakota CalfAID project found that facility owners were often unaware of the purpose of the project's RFID tags. As a result of the common practice at feedlots and other such facilities to remove all eartags from animals upon arrival, the potential outcomes of the project were lost. It will be especially important to educate the entire industry about animal identification practices to prevent the removal of official identification devices.

- *Workable options are available for producers who want to identify their animals electronically without the added expense of reader equipment.* Producers in the Northwest pilot project found value in using "matched set pairs" of eartags. A group/lot visual tag was used for day-to-day management purposes and then matched with an individual RFID tag number—without the use of an RFID reader or software—when the animal moved off the premises. The project also determined that this method can work well with other related management and marketing programs, such as process-, age-, and source-verification.

- *The level of training equipment operators receive directly impacts data collection and, ultimately, the system's success.* In the Oklahoma project, employees at most locations were either unprepared or unwilling to properly operate computer equipment, resulting in poor data capture rates. However, the South Dakota project reported that equipment performance improved with operator training and experience. In fact, all facilities in this project experienced improved read rates as employees became more familiar with the equipment.

- *The use of electronic identification allows for more accurate and efficient recordkeeping.* During the Southwest pilot project, many producers who were exposed to RFID technology for the first time reported a significant reduction in data entry errors. It was also reported that the use of the technology enhanced business practices and, as a result, reduced labor costs.

- *Calves can be tagged successfully with RFID devices at a very young age.* In the Tri-National project (Arizona), dairy calves from 3 to 5 days old were tagged upon arrival at a participating calf ranch and then shipped to a feedlot at 6 to 8 weeks of age. The project reported acceptable tag retention rates.

- *Effective, producer-focused outreach and education is critical to the success of an animal identification system.* The Texas pilot project reported that the biggest challenge in implementing animal identification was not the technology itself, but rather the attitudes among livestock owners towards the technology. State and industry outreach efforts were able to address many common misconceptions about the capabilities of RFID technology and foster participation in the project. Explaining the need for and value of animal identification, with a specific focus on how identification devices can add value to livestock, was particularly effective in garnering producer support.

Appendix 4

Acronyms

AHO – Animal Health Official
AHSM – Animal Health Surveillance and Management
AINMS – Animal Identification Number Management System
AIN – Animal Identification Number
AMS – Agricultural Marketing Service
APHIS – Animal and Plant Health Inspection Service
ASTM – American Society for Testing and Materials
ATD – Animal Tracking Database
ATPS – Animal Trace Processing System
CA – Cooperative Agreement
CCC – Commodity Credit Corporation
CFR – Code of Federal Regulations
COP – Community Outreach Program
CPRS – Compliant Premises Registration System
CSREES – Cooperative State Research, Education, and Extension Service
CWD – Chronic Wasting Disease
DHIA – Dairy Herd Improvement Association
eCVI – Electronic Certificates of Veterinary Inspection
EIA – Equine Infectious Anemia
EMRS – Emergency Management Response System
FFA – National Future Farmers of America
FY – Fiscal Year
GIN – Group/Lot Identification Number
HQ – Headquarters
ICVI – Interstate Certificates of Veterinary Inspection
ISO – International Organization for Standardization
IT – Information Technology
NAHMS – National Animal Health Monitoring and Surveillance
NAIS – National Animal Identification System
NASS – National Agricultural Statistics Service
NPIP – National Poultry Improvement Plan
NPIR – National Premises Information Repository
NSEP – National Scrapie Eradication Program
NVSL – National Veterinary Services Laboratory
OIE – World Organization for Animal Health
PIN – Premises Identification Number
QSA – Quality System Assessment
RFID – Radio Frequency Identification
SPRS – Standardized Premises Registration System
TB - Tuberculosis
USDA – United States Department of Agriculture
VS – Veterinary Services
VSPS – Veterinary Services Process Streamlining
WG – Working Group