

CENTER FOR HISTORIC ARCHITECTURE AND DESIGN

Documenting Dairy Farms in Northern Maryland Phase I: Carroll, Cecil, and Frederick Counties



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Executive Summary

Through a Maryland Historical Trust (MHT) Historic Preservation Non-Capital Grant, with matching in-kind funds provided by the University of Delaware (UD), the Center for Historic Architecture and Design (CHAD) undertook a survey of historic dairy farms in Carroll, Cecil, and Frederick Counties. Conceived of as the first phase of a multiphase effort to document historic dairy farms across the State of Maryland, the goals of this intensive-level architectural study were to survey a total of fifteen (15) dairy farms within Carroll, Cecil, and Frederick Counties; to document at least six (6) dairy farms through measured drawings; and to produce this survey report, including preliminary historical and architectural contexts that might serve as the foundation for the eventual creation of a statewide context for Maryland's historic dairy farms. The work for this project was carried out between June 2020 and March 2022. In total, seventeen (17) historic farms were surveyed. Twelve (12) new properties were identified and added to the Maryland Inventory of Historic Properties, while four (4) properties were re-surveyed for the first time since the 1960s or 70s. One (1) property was re-surveyed from the early 2000s. Across all seventeen dairy farms, a total of 370 resources were surveyed, of which only 24 had been previously included in the Maryland Inventory of Historic Properties. Additional survey is recommended in all three counties due to the lack of comprehensive coverage undertaken in this phase of the project. Of the seventeen (17) dairy farm complexes surveyed during this project, twelve (12) were found eligible by CHAD staff for listing in the National Register of Historic Places under Criteria A and C. Four of these sites were deemed priority sites for listing, including Margaret's Fancy (CARR-326), Losten's Dairy Farm (CE-1584), Mt. Ararat (CE-142), and the Thrasher Farm (F-2-137). This survey project affirmed the urgency of this documentation effort. Many long-time dairy farmers (both current and former) are advancing in age, and demolitions of dairy-related structures (both recent and pending) were discussed at many of the surveyed properties.

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Introduction

The Center for Historic Architecture and Design (CHAD) at the University of Delaware was awarded a Historic Preservation Non-Capital Grant from the Maryland Historical Trust (MHT) on November 5, 2019 (Fiscal Year 2020), to document historic dairy farms in northern Maryland. The grant award from MHT totaled \$48,800, with the University of Delaware providing \$25,000 in in-kind match.

This project, “Documenting Dairy Farms in Northern Maryland Phase I,” consisted of three major components.

1. Seventeen (17) historic sites were surveyed across three (3) counties, Carroll, Cecil, and Frederick, on Maryland Inventory of Historic Properties (MIHP) forms. Seven (7) historic dairy farms were surveyed in Carroll County, five (5) historic farms were surveyed in Cecil County, and five (5) historic farms were surveyed in Frederick County. For each farm, an architectural description, a statement of significance, a property history, and an architectural photo log was completed on a MIHP form. The seven (7) farms surveyed in Carroll County were Margaret’s Fancy (MIHP # CARR-326, CARR-327), Coldsprings Farm (CARR-1739), MD-Delight (CARR-1740), and Panora Acres, which is comprised of three adjacent historic farms (the Sellers Farm CARR-1676, the P. Peterman Farm CARR-1741, and the Daniel Bixler Farm No. 2 CARR-1742). The total acreage surveyed in Carroll County was 859.67 acres. The five (5) farms surveyed in Cecil County were Mt. Ararat (CE-142), Heritage Hill Farm (CE-198), Long Green Farm (CE-208), Brantwood Dairy Farm (CE-1583), and Losten’s Dairy Farm (CE-1584). The total surveyed acreage in Cecil County was 1,344.75 acres. In Frederick County, the five (5) farms surveyed were Glen-Toctin Farm (F-2-135), Lakin Farm (F-2-136), the Thrasher Farm (F-2-137), Friendship Farm (F-6-154), and the Sager-Burrier-Riggs Farm (F-8-170). The total acreage surveyed in Frederick County was 792.92 acres. In all, 2,997.34 acres were surveyed as part of this project.
2. Of the seventeen (17) historic farms surveyed, six (6) were selected to receive additional in-depth architectural documentation in the form of detailed measured drawings. The historic farms chosen to receive additional documentation all had intact barns (converted or purpose-built) that retained a majority of their dairy era plan layout, features, and equipment. In Carroll County, Margaret’s Fancy was drawn. In Cecil County, Brantwood Dairy Farm and Losten’s Dairy Farm were documented. Lastly, in Frederick County the Lakin Farm, the Thrasher Farm, and Glen-Toctin Farm were selected to receive this additional documentation. Converted bank barns were drawn at Margaret’s Fancy and the Thrasher

Farm, while purpose-built dairy barns were drawn at Brantwood Dairy Farm, Losten's Dairy Farm, the Lakin Farm, and Glen-Toctin Farm. Lastly, the bottling facility at the Losten's Dairy Farm was also documented. This is a rare survival of a unique property type associated with dairy farming. This was one of two bottling facilities encountered in our survey, and the best example of this type of resource.

3. The final component of this project was the creation of this survey report, including a brief dairy farm context, as well as short histories of dairy farming in each of the three subject counties.

Between March 2020 and March 2022, seven staff members from the Center for Historic Architecture and Design contributed to the documentation, research, production of MIHP forms, the creation of measured drawings (fieldwork or AutoCAD), and / or the authorship of this report. The seven people are:

- Catherine Morrissey, M.A., associate director (co-PI)
- Michael J. Emmons, Jr., M.A., assistant director (co-PI)
- Kevin Barni, M.A., architectural historian
- Dr. Andrey Mihalow, Ph.D., historic preservation specialist
- Kimberley Showell, historic preservation specialist
- James Kelleher, M.A., historic preservation specialist
- Lillia Schmidt, historic preservation research assistant

Field survey was conducted at the Long Green Farm on August 27, 2020, at Heritage Hill on September 24, 2020, at Losten's Dairy Farm on October 1, 2020, at Brantwood Dairy Farm on December 1, 2020, at Mt. Ararat on December 11, 2020, at the Sager-Burrier-Riggs Farm and the Lakin Farm on February 17, 2021, at all three farms associated with Panora Acres and MD-Delight on July 21, 2021, at the Thomas Farm and the Thrasher Farm on July 22, 2021, and at the Coldsprings Farm and Margaret's Fancy on September 10, 2021. Architectural documentation fieldwork was conducted at Brantwood Dairy Farm on December 10 and 17, 2021, as well as January 14, 2021. Architectural documentation occurred at Losten's Dairy Farm on January 21 and 26, 2021. Staff members from MHT, Heather Barrett and Allison Luthern, assisted in field documentation on January 21, 2021. The Thrasher Farm was documented November 5, 2021, and needs an additional day of fieldwork for the documentation to be completed. The dairy barn at the Lakin Farm was drawn November 12, 2021, with the assistance of staff from MHT, Heather Barrett and Allison Luthern. The converted bank barn at Margaret's Fancy was drawn on November 19, 2021, also with the assistance of staff from MHT, including Heather Barrett, Allison Luthern, and Jessica French. The architectural documentation date for Glen-Toctin Farm is still to be determined at the time of submission of this draft report (March / April 2022). Background

research for the compilation of the MIHP forms and this survey report occurred on an ongoing basis between June 2020 and March 2022.

The organization of this report is based on the suggested content outline found in “Chapter 6: Final Survey Reports” of the *Standards and Guidelines for Architectural and Historical Investigations in Maryland* (2019). The major report sections include the introduction, the research design (which includes the project methodology), the historic and architectural context for dairy farming, results of the field investigations, summary and recommendations, a bibliography, and four appendices. Contained within these appendices are an index of all surveyed properties, as well as a brief overview of historical trends in dairying farming in each of the three subject counties (Carroll, Cecil, and Frederick).

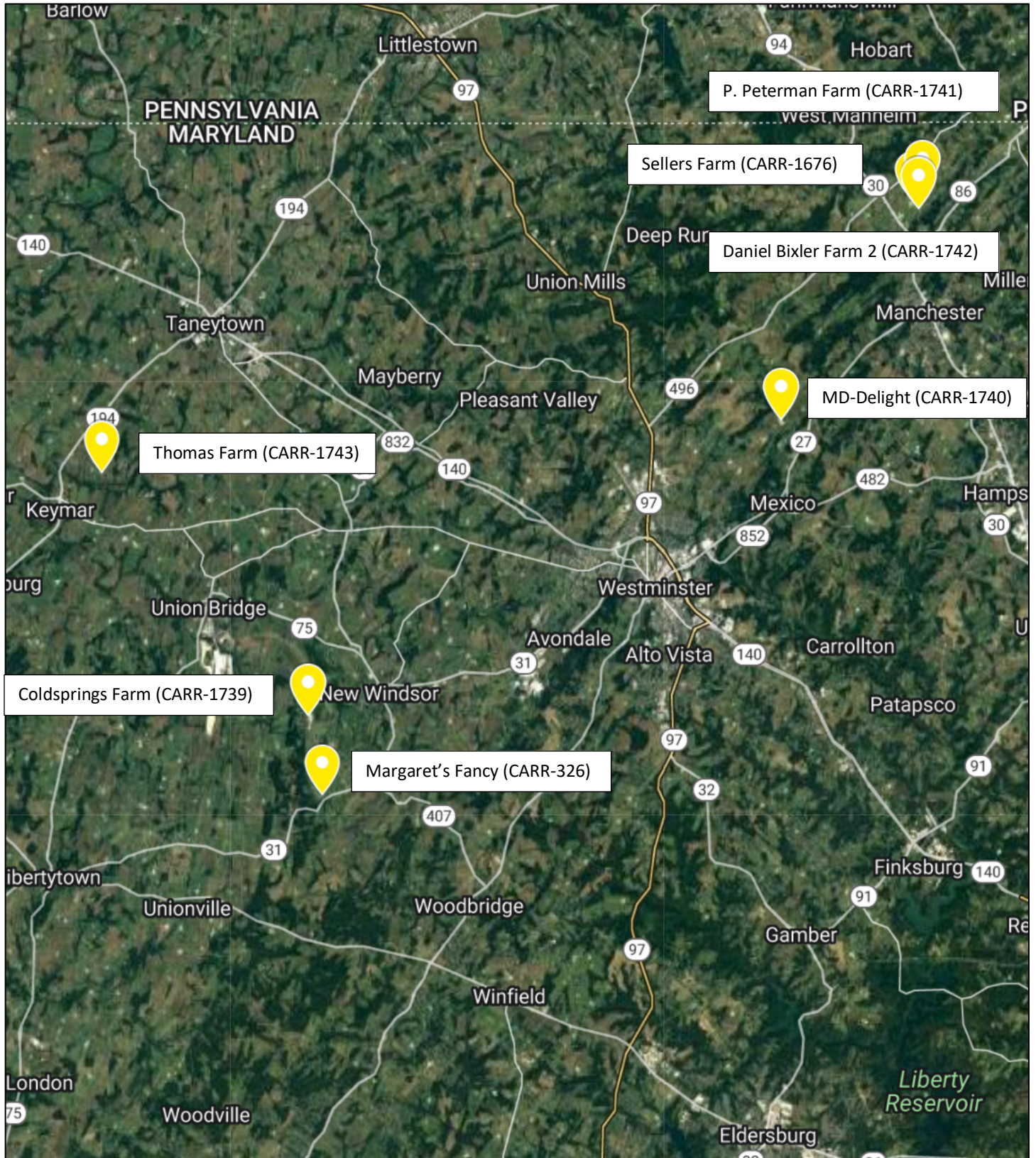


Figure 1. Map showing the location of the seven surveyed dairy farm properties in Carroll County, Maryland (Source Google Maps).

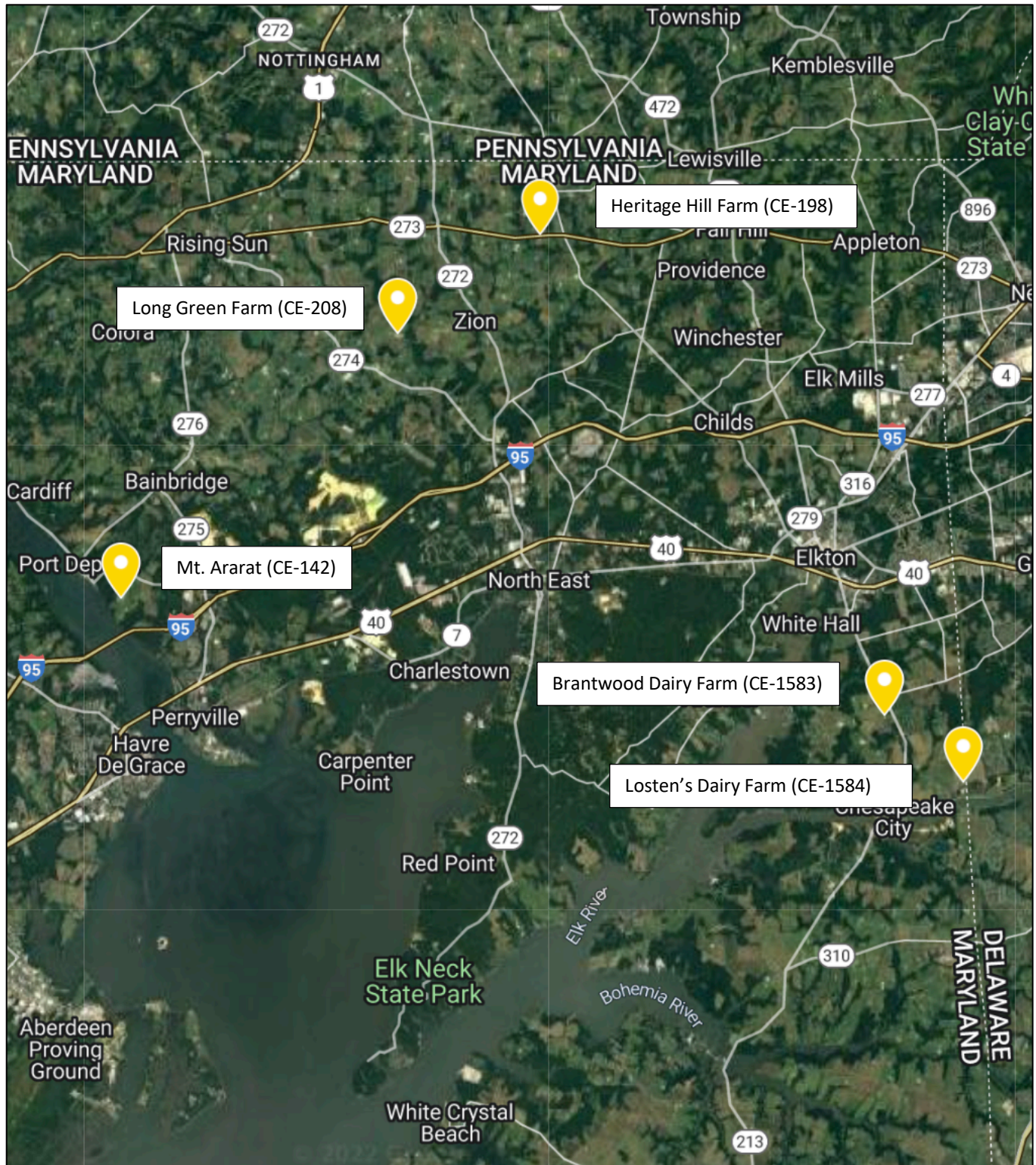


Figure 2. Map showing the location of the five surveyed dairy farm properties in Cecil County, Maryland (Source Google Maps).

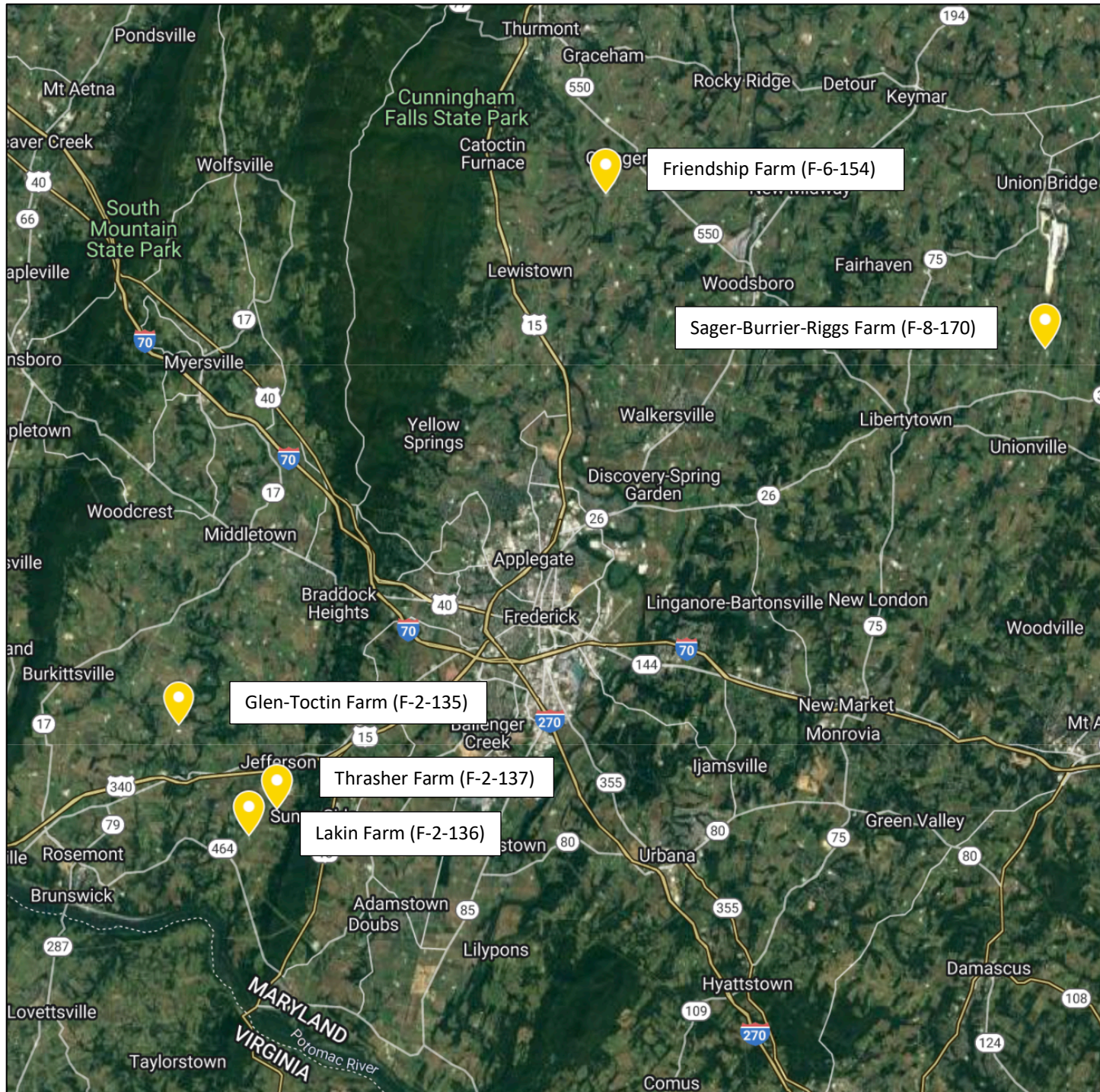


Figure 3. Map showing the location of the five surveyed dairy farm properties in Frederick County, Maryland (Source Google Maps).

Research Design

The principal goal of this project was to survey fifteen (15) dairy farms in Carroll, Cecil, and Frederick counties in accordance with the Secretary of Interior's *Standards and Guidelines for Archaeology and Historic Preservation*, as well the *Standards and Guidelines for Architectural and Historical Investigations in Maryland* (revised 2019). Ultimately, seventeen historic dairy farms were surveyed in total. We undertook a "preservation on paper" approach to record these properties on survey forms, as well as to photo document the resources on each farm property. From the seventeen selected farm properties, six (6) were selected for scaled, annotated field notes and measured drawings produced in AutoCAD. Measured architectural drawings were produced in accordance with the standards established in Historic American Buildings Survey's *Recording Historic Structures and Sites with HABS Measured Drawings* (revised 2020). These survey forms and architectural drawings informed and enhanced the creation of this survey report, including the creation of a brief dairy farm context, as well as brief descriptions of dairying farming over time in each of the three counties. The survey data and architectural drawings were gathered purposely to enhance the knowledge, understanding, and awareness of historic dairy farms—a rapidly declining and threatened property type throughout the State of Maryland. While the purpose of the project is largely documentary, preservation-related activities—such as the creation of future National Register nominations—are a potential by-product of this study.

Methodology

The methodology employed for the field survey in Carroll, Cecil, and Frederick counties followed standards acceptable to the Maryland Historical Trust and the Department of Interior. Starting with discussions with local historians, farmers, historical societies, agricultural museums, land trusts, agricultural extension agents, and farm bureaus, we identified potential sites for inclusion in this study. Next, we contacted the owners of identified properties through a variety of methods, including door knocking, emails, and phone calls. After we had established an initial group of property owners that agreed to participate in the study, we reviewed any existing documentation for the property, and conducted site visits to determine which of the sites were the best candidates to receive new or updated MIHP forms, as well as which sites might be chosen for additional documentation through architectural drawings. Those choices depended on the significance and integrity of the extant dairy-related buildings on the site. The farms selected to receive new or updated MIHP forms were also discussed with MHT staff.

In order to best complete the MIHP forms, as well as contextualize the evolution of the dairy industry in each county, we interviewed property owners as well as a few other interested local farmers and historians. Property

owners provided valuable information about alterations, additions, deletions, and accretions at each farm site. They also provided valuable insights into how changes in dairy regulations have personally impacted their family's operations. Other interested local farmers and historians provided valuable information about potential farms to include in the study, as well as information about changes to dairy regulations, the general trajectory of dairy farming in the area, as well as recounting their own histories with dairy farming.

After each of the seventeen properties were identified for inclusion in the study, and site visits were undertaken, a cartographic study of the sites was carried out. Historic atlases (Martenet's Map of Cecil County, 1858, E. Sachse & Co. Map of Frederick County, 1858, Shearer Map of Carroll County, 1863, Lake, Griffing, & Stevenson Atlas Maps of 1877), historic and contemporary United States Geological Survey (USGS) topographic maps, and aerial photographs (historicaerials.com and vintageaerial.com) aided in the understanding of the selected dairy farms, especially during the mid- to late-twentieth century.

Documentary research was conducted to further understand the history of each individual property. Initial property research was conducted online through the Archives of Maryland Online (mainly MDLANDREC.net), as well as Maryland State Department of Assessments and Taxation (SDAT) to establish the chain of ownership (title trace) of each individual site. Other digital repositories searched for relevant property history included MHT's Medusa, Maryland State Archives, Digital Maryland, Ancestry.com, Newspapers.com, and the United States Department of Agriculture Census of Agricultural Historical Archive (<https://agcensus.library.cornell.edu>).

In order to complete this report, especially the historic context, extensive primary and secondary research was conducted. Currently there is no statewide historic context on the topic of dairy farming for Maryland, and additionally there is very little compiled information on the topic for each of the counties in the survey area. Due to this fact, several other state or regional contexts on dairy farming were consulted. This included "Charles County, Maryland Dairy Context" found in the "Embassy Dairy Plant" draft MIHP form (Nicole A. Diehlmann, 2017), "Dairy Farming in Frederick and Montgomery Counties, Maryland" (Nicole A. Diehlmann and Jacob M. Bensen, 2020), "Historic Context for Richmond Area Dairy Barns, c. 1900-1955" (Louis Berger Group, Inc., 2003), "Historic Context on Fauquier County's Dairy Farms" (Louis Berger Group, Inc., 2012), and "Dairy Farming in Central Delaware, 1880-1940 +/- DRAFT" (Center for Historic Architecture and Design, not dated).

Additionally, state or county contexts related to the general topic of agriculture were also consulted. This included *Tillers of the Soil: A History of Agriculture in Mid-Maryland* (Paula S. Reed, 2011), “Historic Agricultural Resources of Pennsylvania c. 1700-1960” National Register Multiple Property Documentation Form (Pennsylvania Historical & Museum Commission, 2015), “Common Farm Barns of South Dakota, 1857-1858” National Register of Historic Places Multiple Property Documentation Form (Robert C. Vogel, 2007), “Historic Context Study of Minnesota Farms, 1820-1960” (Gemini Research, 2005), and “Agricultural Resources of Vermont” National Register of Historic Places Multiple Property Documentation Form (Vermont Division of Historic Preservation, 1991).

Scholarly publications related to the general topics of farm architecture, agriculture, or dairy farming were also consulted. While too numerous to list, the main sources utilized in this category included Melanie DuPuis’s *Nature’s Perfect Food: How Milk Became America’s* (2002), Robert Ensminger’s *The Pennsylvania Barn: Its Origin, Evolution, and Distribution in North America* (2003), Gabrielle Lanier and Bernard Herman’s *Everyday Architecture of the Mid-Atlantic: Looking at Buildings and Landscapes* (1997), Sally McMurry’s *Pennsylvania Farming: A History in Landscapes* (2017), as well as McMurry’s article “The Impact of Sanitation Reform on the Farm Landscape in U.S. Dairying, 1890-1950” (2013), Lisa Mroszczyk’s “Historic American Building Survey Barns of Mid-Maryland” report (2007), Allen Noble’s *Wood, Brick, and Stone: The North American Settlement Landscape, Volume 2: Barns and Farm Structures* (1984), Terry Sharrer’s *Kind of Fate: Agricultural Change in Virginia, 1861-1920* (2002), Thomas Visser’s *Field Guide to New England Barns and Farm Buildings* (1997), as well as Joyce E. Wessel’s “Baltimore’s Dairy Industry and the Fight for Pure, Milk, 1900-1920,” published in *Business and Economic History* (1984).

Individual histories for Carroll, Cecil, and Frederick Counties were also utilized to understand the development, both historical and architectural, for each county. Important resources for this research included Joe Getty’s *Carroll’s Heritage* (1987), Michael A. Powell and Bruce A. Thompson’s (eds.) *Mid-Maryland: A Crossroads History* (2005), Carol Lee’s *Legacy of the Land: 250 Years of Agriculture in Carroll County, Maryland* (1982), Pamela J. Blumgart’s *At the Head of the Bay: A Cultural and Architectural History of Cecil County, Maryland* (1996), J. Thomas Scharf’s *History of Western Maryland* (1882), and George Johnston’s *History of Cecil County, Maryland* (1881).

Lastly, extensive primary research was conducted to contextualize the history of dairy farming in the State of Maryland, as well as in Carroll, Cecil, and Frederick Counties. This research was mostly conducted through

MHT's Medusa, Ancestry.com, Newspapers.com, as well as the United States Department of Agriculture Census of Agricultural Historical Archive. Lastly, two historical societies were visited to collect information pertaining to the history of dairy farming in Cecil and Frederick counties—a trip was made to both the Cecil County Historical Society and Frederick County Historical Society. However, due to the COVID-19 pandemic, in-person research was severely restricted throughout the duration of this project.

Impact of COVID-19

The entirety of this project was conducted during the COVID-19 global pandemic. While these conditions restricted the ability to perform research for individual subject properties, as well as the generation of this report, it did not impact the field survey. None of the property owners selected to participate declined the opportunity to do so due to the pandemic. During fieldwork visits, CHAD staff was masked and socially distanced from the owners. Additionally, much of the fieldwork work was conducted outside. The pandemic also had no impact on the ability to produce annotated measured drawings of selected sites either. Again, CHAD staff was masked, socially distanced, and mostly outside. Property owners were often not present during the architectural document.

Results

During the course of the survey, we expanded the number of surveyed farms from fifteen to seventeen. This was because one of the selected farms (Panora Acres / Sellers Farm CARR-1676) was composed of three separate, but now conjoined, nineteenth-century farm complexes. Besides the increase in the number of surveyed properties, there were no other changes to the proposed research design. Even with the increase in the number of properties surveyed, the intensity of the coverage was very low. During the twentieth century, these three counties had thousands of active dairy farms, and as such, the seventeen surveyed properties represent a very small fraction of surviving dairy farm complexes in Maryland.

Disposition of Materials

The final MIHP forms, final photographs, and final architectural drawings are on file with the Maryland Historical Trust Library. Draft MIHP forms, field research notes, research materials (deeds, census records, etc.), additional photographs (in some cases upwards of 200 photos of a single site), and architectural fieldnotes are located at the Center for Historic Architecture and Design's archive on the campus of the University of Delaware.

Historic and Architectural Context

Agricultural History: The Evolution of Dairy Farming in Maryland and the United States

Period I: Diversified Farming and Localized, Limited Outputs, Pre-1880+/-

Transportation difficulties, the distance from urban markets, and only a modest demand for fluid milk limited the viability of early commercial dairying for most places in Maryland. Historians have demonstrated that until at least the mid-nineteenth century, “fluid milk drinking was an afterthought” and “fresh milk was not a major American beverage.”¹ Even in the latter half of the nineteenth century, when the popularity of fluid milk began to grow, it was “primarily as a breast milk substitute for infants” or “a beverage for weaned children,” and its market was also mostly limited to urban consumers.²

Before easy refrigeration, fresh milk could only be supplied to a city from its nearest farms, which were best positioned to transport milk quickly to city consumers by wagon, train, or truck. As such, before the 1880s and 1890s, the fluid milk market was limited. Butter and cheese, on the other hand, which were processed from milk but enjoyed a much longer shelf life, could be produced by many more farm families for home consumption or sale on the market, but those products typically did not draw enough income to serve as the primary source of revenue.

The low levels of dairy product consumption were also due in part to seasonal cycles, since, historically, cows only gave milk in the spring and summer, when pasture was plentiful. During the fall and winter months, when pasture and feed were scarce and calves were weaned, cows were “dry” and did not produce milk. In the winter, if people consumed dairy products at all, they typically ate preserved dairy products such as butter and cheese. Dairy products on most rural American farms before the twentieth century thus represented only a small portion of a more diversified farming operation, which typically included a mixture of grain crops and a variety of livestock. Modest volumes of dairy products like butter and cheese were produced for home consumption or to be sold off the farm as one stream of revenue—as was fluid milk, which was sometimes sold for external processing by local butter or cheese factories.

¹ Melanie E. DuPuis, *Nature's Perfect Food: How Milk Became America's Drink* (New York University Press, 2002), 5.

² DuPuis, 5.

Period II: Fluid Milk Distribution, Farm Regulation, & Standardization, 1880 to 1945+/-

As the twentieth century approached, several factors combined to revolutionize dairy farming, and by extension, dairy farm complexes. These interrelated factors included a sharply increased demand for fluid milk, sanitation reform to increase confidence in milk's safety, transportation advances that better facilitated the timely transport of milk to market, advances in agricultural sciences and cow breeding programs, and farmers investing in larger cow herds and concentrating their operations on large quantities of fluid milk production. The processing of milk on the farm decreased dramatically as farm families elected to ship cans of milk to distributors, creameries that processed it into butter, or cheese factories.³ Dairy farming became a major industry in Maryland during the early twentieth century, and by 1929, dairy sales exceeded \$25 million, far exceeding income from traditional agricultural products.⁴

Market demand for milk soared to new heights in the late-nineteenth and early-twentieth centuries, as waves of immigration swelled population numbers in American cities and as boosters expanded milk's appeal as a mainstream beverage. These thirsty urban markets provided a financial opportunity for farmers who operated within shipping distance to cities—a radius limited by milk's tendency to spoil quickly and by unequal access to railroad lines, though the invention of automobiles, including trucks, opened up vast new geographies of dairying in the twentieth century. Switching to fluid milk production or investing in larger herds was thus a widely appealing strategy for farm families within the milksheds of urban markets, especially since milk emerged as an increasingly profitable commodity while wheat, pork, and beef faced challenging price competition from western farmers.⁵

With milk consumption dramatically increasing, so did illnesses from milk-borne pathogens, including tuberculosis, diphtheria, and scarlet fever. This prompted reformers and government officials to take aggressive action to clean up milk supplies, with a flurry of sanitation regulations emerging during the 1890s and beyond. For example, in 1895, Washington DC passed regulations allowing inspectors to visit dairy farms that supplied milk to the city. Three years later, in 1898, the State of Maryland enacted legislation that enabled a livestock sanitary board to “inspect at least annually premises where cows are kept and enforce rules requiring buildings

³ Sally Ann McMurry, *Pennsylvania Farming: A History in Landscapes* (Pittsburgh, PA: University of Pittsburgh Press, 2017), 50.

⁴ Nicole A. Diehlmann and Jacob M. Benson, “Thematic Historic Context: Dairy Farming in Frederick and Montgomery Counties, Maryland,” draft (on file at the Maryland Historical Trust, Crownsville, MD), 1, quoting Reed and Wallace 2003, page 8.

⁵ McMurry, “Pennsylvania Farming,” 52.

to be sanitary, well lighted and ventilated, clean, and painted or whitewashed; cows to be clean, properly fed, and watered; milk vessels to be clean, etc.”⁶

THE IMPORTANCE OF MILK as a food can hardly be overestimated. There is no other single food of such vital importance to our national welfare.

This department has previously published bulletins discussing milk as it concerns the farmer who produces it, the dealer who distributes it, and the manufacturers of butter and cheese. This bulletin discusses milk as a food from the point of view of the consumer, and shows why it is indispensable in the diet of children and one of the best foods for adults. Suggestions for the care and use of milk are also included, as well as directions for pasteurizing it at home.

Contribution from the States Relations Service

A. C. TRUE, Director

Washington, D. C.

August, 1921

Figure 4. First page of a 1921 USDA booklet promoting the value of milk (*Milk and its Uses in the Home*, August 1921, page 2).

These progressive efforts at sanitization in the dairy industry not only mandated a new level of cleanliness in the milking process, but also soon revolutionized the architecture of dairy farm complexes. Architectural solutions for modern dairying were disseminated by government agencies, agricultural extension offices, and agricultural

⁶ G. Terry Sharrer, *Kind of Fate: Agricultural Change in Virginia, 1861-1920* (West Lafayette, IN: Purdue University Press, 2002), 163; Nicole A. Diehlmann, “Embassy Dairy Plant” draft MIHP form, 2017, 4.

departments of state colleges, which also engaged in dairy-related experiments and circulated their findings regarding scientific feeding programs, disease control, livestock breeding, and many other dimensions of dairy farming. The result of all of this was a gradual standardization of dairy farming across the United States, both in its processes and in its architecture.

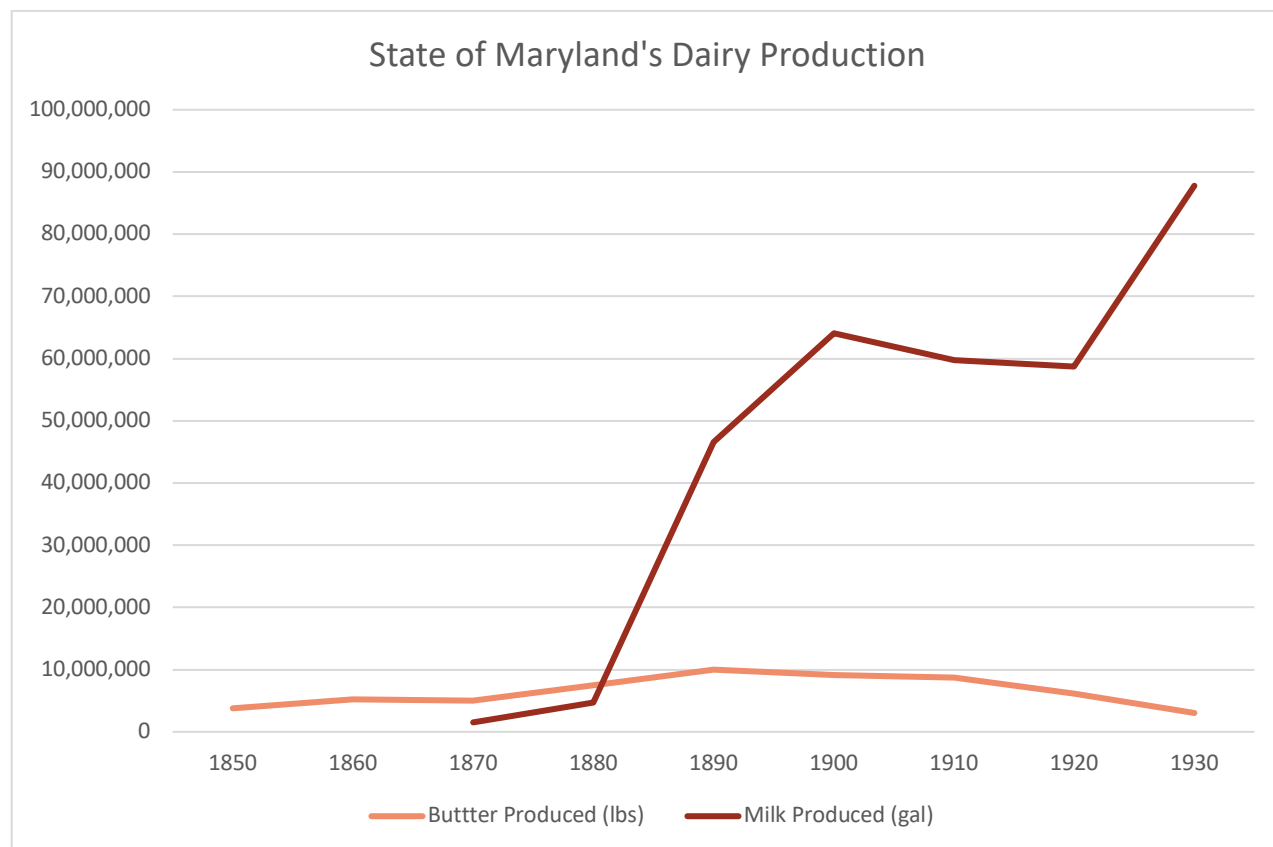


Figure 5. Chart showing the relationship between butter and milk production from 1850-1930.

Period III: Industrialization, Efficiency, and Consolidation, 1945 to 1985 +/-

The decades after World War II marked another transformative era for dairy farming, as the industry became somewhat a victim of its own success—with increased productivity nationwide leading to product surpluses, downward price pressures, and a resulting need for farmers to scale-up their herds, maximize labor efficiencies, and increase milk output to remain profitable or solvent. This often-required additional investments for more cows, new machinery, and new facilities—including new milking parlors, bulk milk tanks, freestall barns, manure tanks, and bunker silos.⁷ Government regulations, including labor and environmental laws, also increased costs. Many dairy farmers could not afford this new level of investment, or chose not to take such financial risks in an increasingly challenging industry, leading to the closure or phasing out of a huge number of dairy operations over several decades. While the first half of the twentieth century had witnessed a steep increase in the number of American farms specializing in dairy, the new financial challenges after mid-century completely reversed the trend, with a large majority of dairy farms no longer dairying by the end of the 1980s.

After 1949, government price support programs played a strong role in stabilizing and sustaining the dairy industry. Still, the 1950s marked the beginning of several decades of steady decline—leading to an increased intensification, concentration, and consolidation of dairy operations. The number of dairy farms decreased dramatically, but those that survived got bigger and produced far more milk per cow. While the total amount of milk produced in the United States in 1979 was about the same as it was in 1955, it was now produced by only about half the number of cows—meaning cows had become twice as productive over just 25 years, due to better technology, feeding programs, and health sciences.⁸ Similarly, while the number of dairy farms (and herds) decreased substantially each decade, the average herd size rose steadily. In 1959, the vast majority of American dairy herds (93%) numbered less than 30 cows, but by 1979, one-third of farms had herds between 30 and 99 cows, and that trend accelerated in the 1980s and 1990s.⁹

Rising costs and increased regulations posed substantial challenges for all dairy farm operators in the second half of the twentieth century. While most dairy farms during the early twentieth century had relied heavily on their own resources for both dairy production and self-provisioning—including their own pasture, animal feeds, fertilizer, and finished grains—by the late twentieth century, “a decisive shift had taken place to purchased

⁷ McMurry, “Pennsylvania Farming,” 340.

⁸ S.B Nott, D.E. Kauffman, and J.A. Speicher, “Trends in the Management of Dairy Farms Since 1956,” *Journal of Dairy Science*, Vol. 64, No. 6, 1981, 1334.

⁹ Nott et al, 1334.

‘inputs’ in a process that may be compared to outsourcing.” New buildings, large machinery, and expensive milking systems (some even computerized) required substantial investment. Many farm families thus sought employment and additional income off the farm.¹⁰

Government regulations also continued to shape dairy farming in the final decades of the twentieth century. For those who hired farm workers to help operate their scaled-up dairy operations, a flurry of new labor laws, both national and state, increased costs and complicated management.¹¹ Yet, while sanitation reform had transformed dairy farming in the early twentieth century, it was perhaps environmental regulations that most impacted dairy farm operations during the final decades of the twentieth century. Manure management was a major focus of regulators, especially as run-off from major dairy operations contributed to serious water quality problems, including in the Chesapeake Bay. Other environmental regulations in the late twentieth century posed potential new costs on dairy farmers and further transformed agricultural landscapes—including many “best management practices,” or BMPs, to create riparian buffers, waterway crossings for cattle, wetlands to filter stormwater, and fences to keep cattle from streams—though enforcement may have been inconsistent.¹²

The 1980s marked a particularly challenging time for dairy farmers, as surplus supplies of milk drove prices down significantly, while the costs of operation continued to rise. By the mid-1980s, the federal government established a buyout program (Dairy Termination Program) in an attempt to manage the supply problem, leading to large numbers of dairy farmers selling their herds and shuttering their dairy operations.¹³ With the majority of dairy farms closing their dairy production, and with the small number of surviving dairy farms renovating their complexes substantially during the last fifty years, historic dairy farm complexes have disappeared at an alarming rate. Even where former dairy farms remain in some other agricultural use like crop and beef production, the purpose-built stable barns, milk houses, old silos, and other historic dairy buildings are often destroyed or repurposed.

¹⁰ McMurry, “Pennsylvania Farming,” 336.

¹¹ Nott et al, 1337.

¹² McMurry 345.

¹³ The Louis Berger Group, Inc., “Historic Context on Fauquier County’s Dairy Farms” (Morristown, NJ, January 2012), 18.

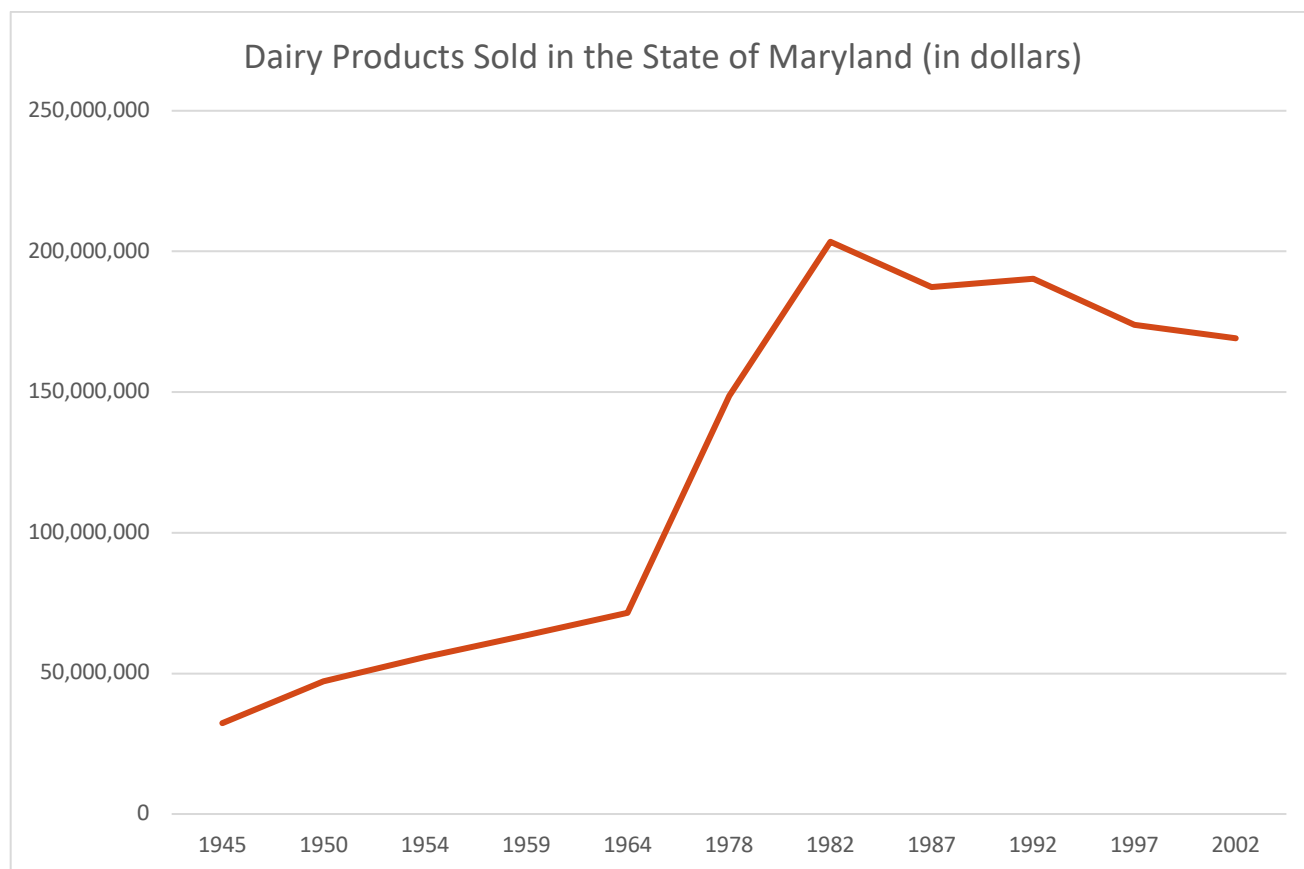


Figure 6. Chart showing the value of dairy products produced in the State of Maryland from 1945-2002.

Architectural Context: Types of Buildings, Structures, & Other Dairy Farm Resources

The Evolution of Dairy Farm Complexes & Their Value as Historical Documents

“Farm buildings write the history of the agricultural landscape,” wrote Gabrielle Lanier and Bernard Herman in 1997, while noting that, in contrast to the information found in historical documents, farm structures reveal how families “actually engaged in the business of farming.” Since agricultural complexes are dynamic, ever-evolving landscapes, and because “changes in agriculture translate into changes in the landscape,” surviving farm buildings—and the alterations made to their design, function, and siting over time—might provide “the best sources we have for learning about the history of agriculture,” and, of course, individual farms.¹⁴ This is certainly the case with Maryland’s dairy farms, which, like their counterparts across much of the United States, experienced rapid transformations during the early twentieth century and again after the 1940s. This section highlights some of the typical components of Maryland’s dairy farm complexes over time, including brief architectural contexts for individual buildings, structures, and land features that became widespread during each of the three general phases of dairying history.

Period I: Diversified Farming and Localized, Limited Outputs, Pre-1880+/-

Before the first decades of the twentieth century, dairy farming typically focused on the small-scale production of butter, cheese, and/or milk, for domestic consumption or sale in local markets, as only one part of a broader, more diversified farming operation—and dairy farm complexes reflected this lack of dairy specialization and the limited market orientation for fluid milk production. Typically, during this early period of dairy activity, no farm buildings were dedicated solely to dairy production. Instead, dairying activities occurred in multifunction buildings and spaces alongside other farming activities. Until the mid-nineteenth century, milking often occurred in the open air of a barnyard.¹⁵ Before regulations to mandate the separation of animals or work functions, a single bank barn often housed a wide variety of livestock and an equally wide variety of agricultural functions. It was not until the twentieth century, with increased specialization and regulation, that dairy farms transformed into the distinctive agricultural complexes with structures solely dedicated to fluid milk production.

¹⁴ Gabrielle M. Lanier and Bernard L. Herman, *Everyday Architecture of the Mid-Atlantic: Looking at Buildings and Landscapes* (Baltimore, MD: Johns Hopkins University Press, 1997), 177; 180.

¹⁵ Rebecca Sheppard, “Dairy Farming in Central Delaware, 1880-1940 +/-: An Historic Context” draft (Newark, Delaware: Center for Historic Architecture and Design, undated), 7-8.

Bank Barns

Bank barns were typically large, multilevel, multifunctional agricultural buildings in which some dairy activities took place, alongside other stabling, storage, and processing functions. By the mid-nineteenth century, as dairy farmers increasingly housed larger herds for longer periods of time, they were urged by agricultural reformers to abandon smaller barns and multiple outbuildings in favor of consolidating their many operations and functions within a large, centralized barn—allowing them to save money and increase efficiency.¹⁶

Bank barns, which are almost always embanked on one side, are large, two- or three-level buildings, and they were especially popular in the hilly Piedmont region of the northern Mid-Atlantic, where the natural topography often allowed for their easy construction—since they could be easily built into a natural hillside or slope. Alternatively, on flatter terrain, a bank barn could be created artificially using a manmade embankment or earthen ramp. The two longitudinal sides of a bank barn are thus entered at different floor levels due to its embanked position. The two (or three) levels were utilized for different functions, with the lower level dedicated to animal housing and feeding, and the upper floors featuring hay mows, grain processing areas, and storage.¹⁷ Farmers utilized gravity to move material between levels. The upper level of the bank barn typically contained storage spaces for fodder, which was pitched down to the animals on the lower level through a hatch or chute at feeding time.¹⁸ The lower level of bank barns featured stables and stalls that housed horses, milk cows, beef cattle, and occasionally sheep or pigs. The stalls and stables were usually organized perpendicular to the roof ridge. These aisles of animal stalling were separated by feeding aisles for humans to access the animals.¹⁹ The exterior of the lower banked story typically featured a series of several doors and windows across this façade, with doors corresponding to either the feeding aisles or the rows of stalls. Typically, early doors on the lower level were Dutch doors—this allowed more light and fresh air into this space, while securing the animals on the inside of the barn.²⁰ The lower levels of bank barns almost always opened onto a paddock or pound. Bank barns were often constructed with the taller side of the barn (the one with the paddock) facing east or south on the landscape. Many examples in the Piedmont region featured stone-lined paddocks. In other regions, where fieldstone was less abundant, these spaces were often enclosed with wood fencing and, later,

¹⁶ Sheppard, 7-8.

¹⁷ Lanier and Herman, 180-181.

¹⁸ Sheppard, 7-8.

¹⁹ “Pennsylvania Barn,” PHMC Pennsylvania Agricultural History Project, August 26, 2015, <http://www.phmc.state.pa.us/portal/communities/agriculture/field-guide/pennsylvania-barn.html>.

²⁰ Lanier and Herman, 183-184.

concrete. These paddocks provided farmers with additional workspaces.²¹ However, milking often occurred inside the lower level of the bank barn, and to keep cows stationary during milking, farmers as early as the 1830s built wooden stanchions—vertical wooden bars through which the cows put their heads—though stanchions did not become common until later in the nineteenth century.

Springhouses

Springhouses were multipurpose structures that were the site of dairy activities on farms, especially for butter making, cheese production, and the storage of fluid milk. Springhouses were located at the site of a natural spring and served to protect the spring and prevent the pollution of spring water. They were typically small, rectangular buildings, constructed of stone or brick for their stability and insulating properties, and generally topped with a wooden, front-gable roof. The well-insulated construction of springhouses provided cool storage environments due to their masonry walls, their frequently embanked or partially-subterranean construction, and the cooling effect of the cold spring water emerging inside—and they were ideal for storing dairy products.²² Wooden shelves arranged around the interior walls of the springhouse could hold dozens of shallow milk pans, where cream was allowed to rise in preparation for buttermaking.²³ Once the cream had risen, it was skimmed off the top and churned into butter.²⁴ Typically managed by women, who contributed both labor and careful management and planning, butter dairying was a seasonal task undertaken “during the months when freshened cows were lactating, and tailing off during the winter as the cows dried off.” Finished butter and cheeses could be preserved in the springhouse and used or sold year-round as demand warranted.²⁵ Similarly, fluid milk could be refrigerated in the springhouse to slow spoilage.

²¹ Lanier and Herman, 183-184.

²² Allen G. Noble, *Wood, Brick, and Stone: The North American Settlement Landscape, Volume 2: Barns and Farm Structures* (Amherst, MA: The University of Massachusetts Press, 1984), 80.

²³ McMurry, “Pennsylvania Farming,” 27-28.

²⁴ Thomas Durant Visser, *Field Guide to New England Barns and Farm Buildings* (Hanover, NH: University Press of New England, 1997), 110.

²⁵ McMurry, “Pennsylvania Farming,” 27-28; 193-194.

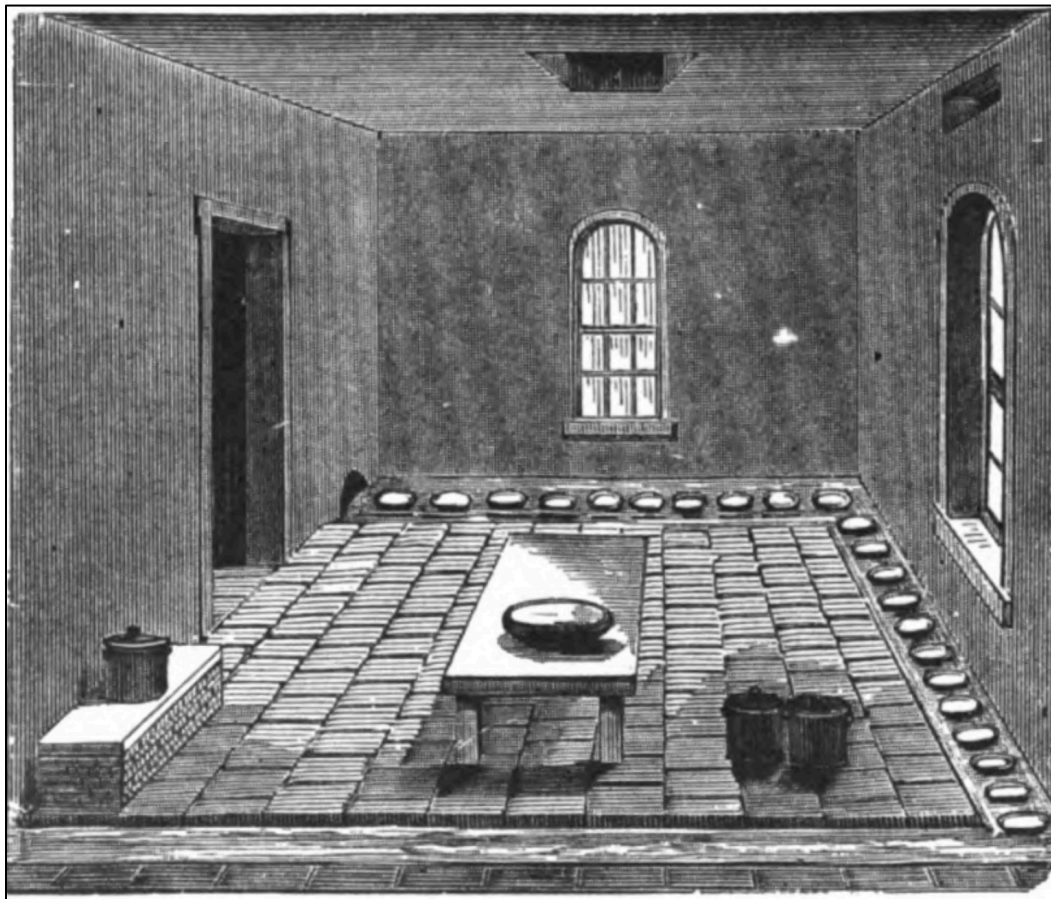


Figure 7. Interior of a well-appointed, perhaps idealized springhouse, showing pans of milk cooling in a trough. From Byron D. Halsted, *Barn Plans and Outbuildings* (New York: Orange Judd Company, 1914), 281.

Early Silos

Silos, rather than storing dry grains, were designed to preserve ensilage (or “silage”), typically comprised of green fodder from crops like field corn, preserved in a succulent condition, providing a nutritious, sometimes fermented feed that increased productivity of milk cows and provided additional feed during winter months.²⁶ Though the use of silos did not become widespread until the 1920s, when many farm families concentrated their operations on the production of fluid milk, the earliest silos were constructed during the last decades of the 1800s.²⁷ Most of these early silos were not the round, tower silos recognizable to most people today, but instead were excavated pits, typically square or rectangular, usually lined in stone, and often incorporated inside the lower level of existing bank barns.²⁸ Soon, these rectangular silos were built above-grade and framed in wood,

²⁶ Noble, 69.

²⁷ In 1882, the U.S. Department of Agriculture only enumerated 91 farms with silos, concentrated in New York and New England, which likely served as the architectural “hearth” for the spread of silos. See Noble 71.

²⁸ Noble, 73.

first essentially as rooms inside barns, and then as freestanding structures outside the barn—constructed with dimension lumber and often covered in ordinary barn siding.²⁹ These squared, wood-framed silos, sometimes in the form of tall “tower” silos topped with small gable roofs, were affordable and easy to build, but they were often problematic. Though the interior corners were sometimes “rounded” by adding diagonal boards, any squared or angled spaces tended to result in spoilage, as corners led to silage getting stuck or created air pockets where mold formed. Furthermore, wood construction often did not remain airtight for long, since the wood bracing was typically not strong enough to endure the heavy weight and pressures of ensilage over the long term, leading to settling and openings for air infiltration. Foundations also frequently rotted or were penetrated by rodents. As such, rectangular silos were rarely built after the turn of the twentieth century, as round tower silos constructed of wood, hollow tile, concrete, and other materials emerged as the preferred form.³⁰

Period II: Fluid Milk Distribution, Farm Regulation, & Standardization, 1880 to 1945+/-

During the late nineteenth and early twentieth centuries, major transformations occurred in both the dairy farming industry and its farm landscapes—resulting in “an architectural revolution on the farm.”³¹ Several interrelated factors—including changes in consumption patterns, advancements in agricultural sciences, progressive regulations imposed by state and local governments, and experiments with new building materials—would all significantly transform many dairy farm complexes and their buildings over just a few decades. This period produced some of the most iconic farm structures of the twentieth century, including the silo, the tidy gambrel-roofed dairy barn (as referred to as stable barn), and milk houses for safely storing milk. This era also represented a major shift towards standardized, national design trends on dairy farms, the result of widely distributed design plans by land-grant universities, the federal government, and architectural supply companies, as well as industrialized building materials and machinery that those companies sometimes shipped nationwide.³²

Round Tower Silos

Along with stable (dairy) barns and milk houses, round tower silos emerged as a widespread sign of agricultural modernity on American dairy farms after 1910. It was a push for increased productivity, not government regulation, that led to the emergence of silos in the late 1800s, as well as the frequent innovations, material

²⁹ Noble, 73; Visser, 131.

³⁰ Noble, 74.

³¹ McMurry, “Pennsylvania Farming,” 196.

³² McMurry, “Pennsylvania Farming,” 199.

changes, and evolution of the silo form witnessed throughout the twentieth century. Though previous forms had emerged in the late 1800s, rounded tower silos were not a common feature on dairy farms until after World War I, after which the round tower silo proliferated on agricultural landscapes as more farms switched to fluid milk production.³³ The most common construction materials for tower silos during the first few decades of the 1900s included wood staves, concrete rings, and hollow tile block, with concrete being the most popular well into the second half of the century.³⁴ Wooden stave silos, often formed with vertical tongue-and-groove boards held tightly together by adjustable, metal compression hoops, were the first widely-built type of round tower silo—but they enjoyed a fairly short period of popularity due to their short life span (estimated by one expert in 1908 to be as short as five years).³⁵

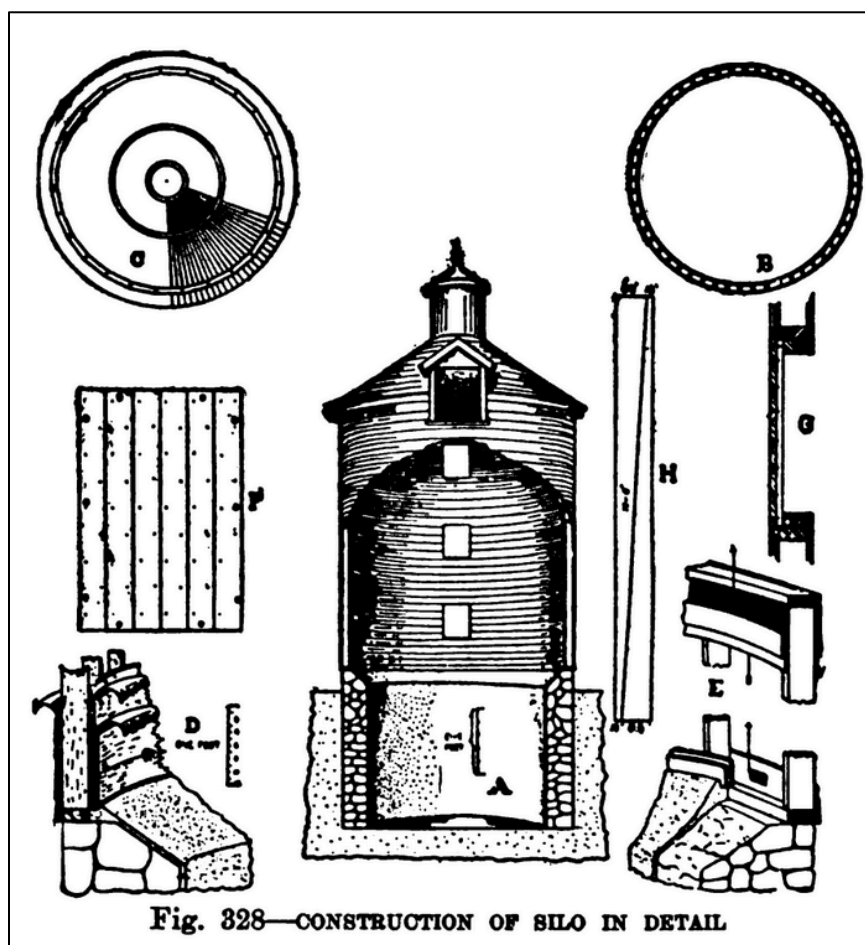


Figure 8. Construction details of an early wood tower silo. From Byron D. Halsted, *Barn Plans and Outbuildings* (New York: Orange Judd Company, 1914), 328.

³³ McMurry, "Pennsylvania Farming," 201. By 1908, one silo manufacturer proclaimed, "Square silos were of yesterday. The round silo is of today." Quoted in Visser, 134.

³⁴ McMurry, "Pennsylvania Farming," 201.

³⁵ Noble, 74-76; Visser, 134; "Bulletin 100, Modern Silo Construction," Experiment Station, Agricultural Engineering Section (Ames, Iowa: Iowa State College of Agriculture and Mechanical Arts, July 1908), 120.

Masonry tower silos emerged around the time of World War I as a stronger and more durable alternative to wooden silos, almost eclipsing the latter by the Great Depression. Masonry silos not only required less maintenance, but they also could be built higher than wooden silos, offering increased capacity. Airtight construction was much easier to achieve with masonry, as well, leading to less spoilage and waste.³⁶ Brick silos were rare, but beginning in the 1910s, many silos were built using structural terracotta (also called hollow tile), constructed with interlocking, structural clay blocks or tiles, secured and sealed with cement mortar, and usually glazed in a reddish-brown or orange color on their exterior surfaces. While highly effective, hollow tile silos were also more expensive, and the structural blocks were relatively brittle and easily damaged if impacted with machinery. As such, hollow tile was popular during the 1920s among those who could afford the investment, but construction with the material faded quickly during the Great Depression as farm construction waned and hollow tile fell out of popularity as a building material, more generally.³⁷ On the other hand, concrete silos enjoyed immense popularity beginning in the early 1900s and lasting well into the second half of the century. Some of these early concrete silos were constructed in one piece by farmers using poured concrete in a single form, but much more common were silos built using multiple, interlocking concrete rings, which could stack to various heights.³⁸ At least as popular, if not more so, were concrete stave silos, which, like their wooden counterparts, utilized vertical, interlocking staves that were banded together with metal rings—but proved far more durable and airtight than wooden stave silos. These concrete silos, produced by factories to be assembled on farms, dominated as the primary silo type across much of the United States for almost a half century, from the 1920s until the 1970s.³⁹ Despite some having issues with excessive dampness, even when waterproofed on the inside surfaces, many concrete silos survive, and some are still used today.⁴⁰

Though many extant tower silos today are missing their roofs, all of them—whether wooden, hollow tile, or concrete—originally had roofs or caps. The earliest tower silos, especially square wooden ones, often featured wooden gable roofs. The roofs of many early circular tower silos tended to be of metal construction and designed as cones, followed by hipped cones (often with standing seams), and then finally, low domes and

³⁶ Noble, 77.

³⁷ Visser, 138-139; Noble, 77.

³⁸ Noble, 77; Visser, 136.

³⁹ Visser, 137-138.

⁴⁰ Visser, 136.

“hemispheres.”⁴¹ In addition, most silos had fixed ladders, typically within a chute, which covered a series of loading doors spanning the entire height of the silo.

Stable (Stanchion) Barns / Purpose-Built Dairy Barns

During the early twentieth century, entirely new designs emerged for dairy barns as a result of new government sanitary regulations, progressive design theories, and the emergence of new architectural materials. Though many farmers retained their older barns and renovated them to meet the demands of new regulations (see below), many others between 1910 and 1950 invested in purpose-built dairy barns or “stable” barns—a new type of dairy barn that was “unequivocally modern.”⁴² By design, “everything about a stable barn was already compliant with sanitation rules of the time.”⁴³ In 1915, one of the major distributors of barn plans and parts, the Loudon Machinery Company, boasted that their designs single-handedly and economically solved a multitude of problems, including “proper lighting, heating, ventilating, drainage, disposal of manure, and other sanitary and hygienic problems, as well as proper protection against weather exposure and fire risk.”⁴⁴ These purpose-built stable barns, unlike bank barns, did not reflect regional vernacular forms, but instead participated in a nationwide standardization (and sanitation) of agricultural design. While Mid-Atlantic barns might have once differed significantly from barns in New England, the South, the Midwest, or even Pennsylvania, now dairy barns in the Maryland might look almost identical with their counterparts in California.

Based on plans published by the United States Department of Agriculture (USDA), agricultural departments of state colleges, or mail order companies like Sears and Roebuck, stable barns were typically long and rectangular in form, featuring one primary floor flush with ground level, with a second-story hay loft above. The barn walls were constructed most often of concrete block or hollow tile block, while the roof was usually framed with trusses of dimensional lumber, sometimes laminated, and shaped in gambrel, round (circular), or pointed-arch (“rainbow” or Gothic) form to allow more space for hay storage. Roofs were often punctuated with ventilators at their ridge line. The roof at the front gable sometimes featured a hood that projected beyond the wall surface, to lend protection for the hoist and hay door at the second level.

⁴¹ Noble, 77.

⁴² McMurtry, “Pennsylvania Farming,” 197.

⁴³ McMurtry, “Pennsylvania Farming,” 199.

⁴⁴ Loudon Machine Company, *Loudon Barn Plans* (Guelph, Ontario: Loudon Machine Company, 1915), 3.

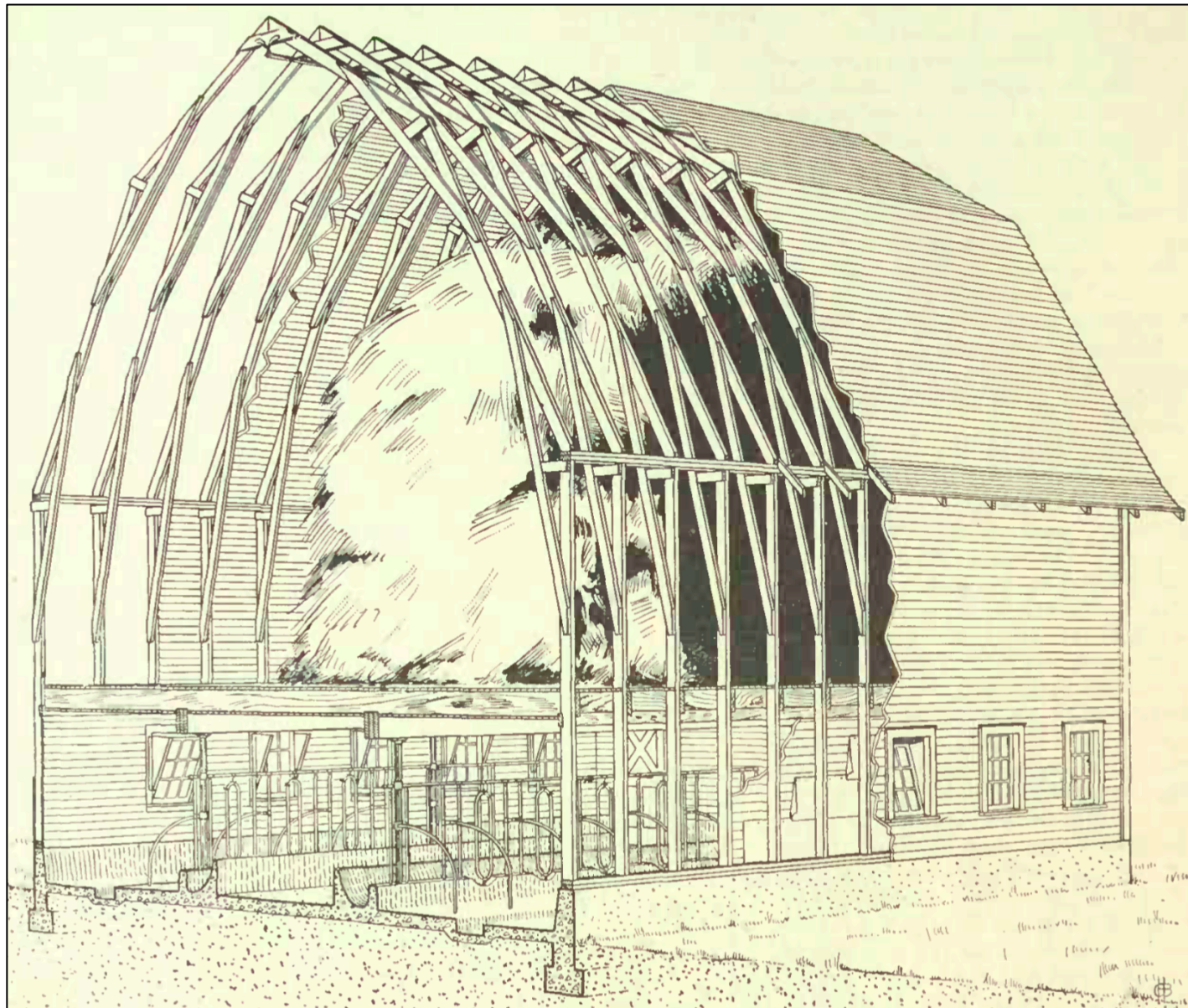


Figure 9. Three-dimensional cross-section of a typical stable (or stanchion) barn. From Loudon Machinery Company, *Loudon Barn Plans* (1915), page 11.

Inside, the main floor of a typical stable barn, usually accessed by large central doors in the gable ends, was organized lengthwise—typically with a central aisle flanked by rows of stanchions on either side, creating a highly efficient layout for moving cows, feed, and manure. Floors were made of poured concrete—touted as durable, economical, and clean—with raised platforms for the cows and recessed gutters behind them for efficient manure removal. Ceilings were usually constructed of interlocking, wooden tongue-and-groove boards, to better prevent dust, hay particles, or other contaminants from dropping from loft into the lower-level milking

floor.⁴⁵ Stanchions and the tubular bars separating cows in each stall were all metal, as were the adjustable drinking cups affixed in front of the cows. The walls, almost always plastered and painted white on their interiors, were punctuated by repeating rows of mass-produced, metal-framed windows—often hopper-style to allow the windows to be tilted inward for air circulation.⁴⁶

Nationwide, and on individual farms, the stable barn represented a step towards larger-scale production and increased specialization, accommodating “bigger herds of bigger cows,” plus large amounts of feed, as many farm families scaled up their fluid milk operations.⁴⁷ The designs of these purpose-built dairy barns reflected this standardization in pursuit of safe and efficient milk production, as experts after 1908 increasingly established national standards for barn width, stall size, and window space per cow.⁴⁸

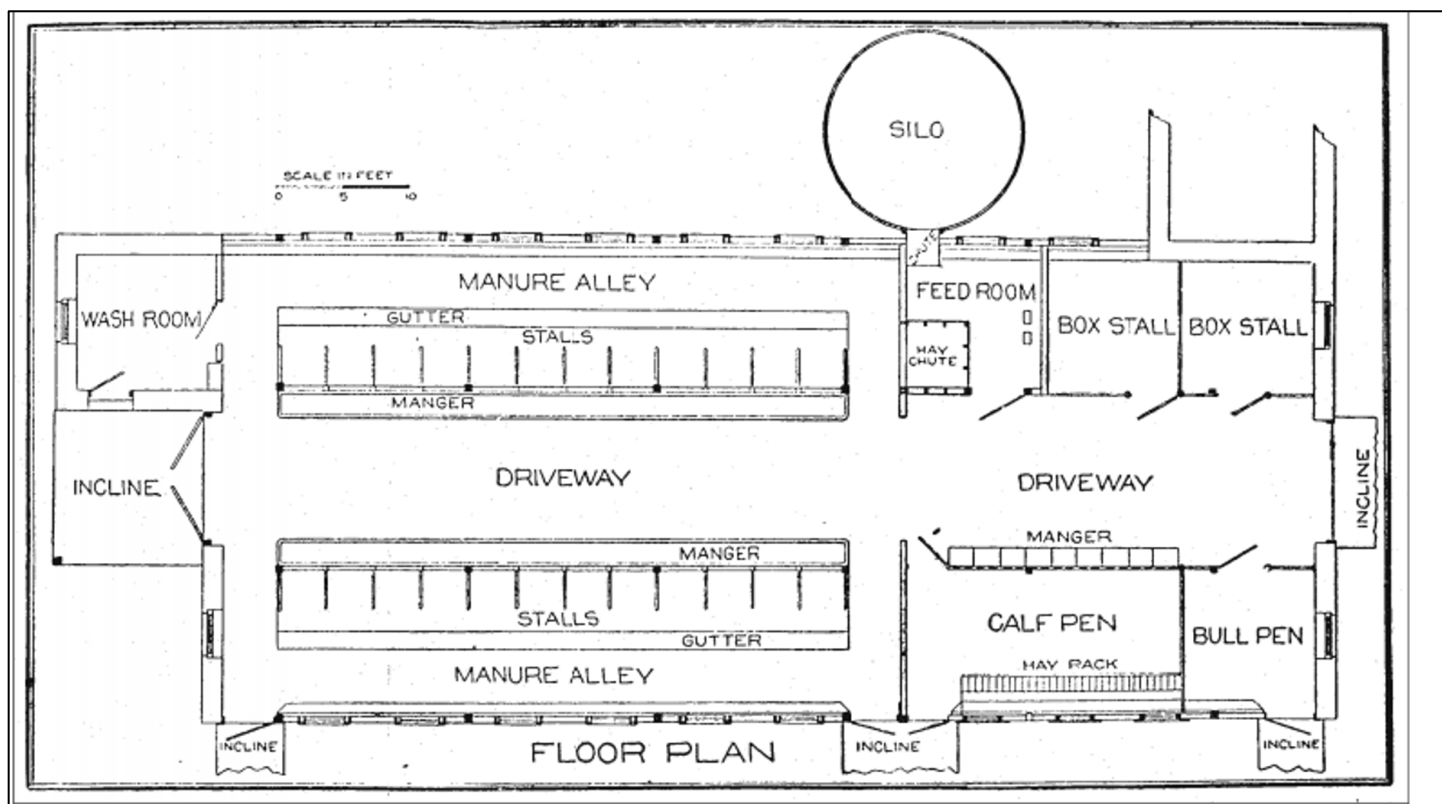


Figure 10. USDA recommended dairy barn floor plan, 1908.

⁴⁵ Diehlmann and Bensen.

⁴⁶ McMurry, “Pennsylvania Farming,” 197-199.

⁴⁷ McMurry, “Pennsylvania Farming,” 199.

⁴⁸ Diehlmann and Bensen.

Bank Barn Renovations

Renovations to existing bank barns, after the emergence of strong dairy regulations, mimicked or incorporated the architectural innovations of the new stable barns, as farmers attempted to conform to sanitary regulations and incorporate new technologies and materials into their operations.⁴⁹ The lower levels of bank barns, once admired for their labor saving arrangement, their dark, warm atmospheres (providing comfortable work conditions in the winter), and even their valuable manure piles, now “came under attack” for being unhealthy, germ-breeding, unventilated, ill-lit, fly-infested spaces, especially problematic for handling milk.⁵⁰ Besides problems with germs, wrote the Radford Architectural Company in 1908, “animals housed in these expensive dungeons were not happy and showed their discomfort in watery eyes, luster-less hair, hot noses and hot, feverish breath, with fretful, quarrelsome actions together with their inability to grow or fatten.”⁵¹ Municipal and state sanitation laws prescribed architectural changes based on the theory that bacteria growth in barns could be inhibited by implementing easily cleaned watertight surfaces, improving air circulation, whitewashing walls and ceilings, and increasing sunlight.⁵² To prevent cross-species contamination, housing for horses, swine, and chickens needed to be well separated, often leading to new stables, pig houses, and chicken houses built away from the bank barn. Water drainage, manure management, and even privy location were also regulated to ensure more healthy dairying environments. The lower levels of bank barns were often entirely renovated, with farmers removing old wooden stalls and stanchions, pouring concrete flooring, featuring raised platforms for the cows, with metal stanchions in front and concrete gutters for manure behind them. Adjustable, metal drinking cups from companies like Starline were affixed on the stanchion structures in front of the cows. In Pennsylvania-style bank barns, which included an overhanging forebay at the second level, a new wall often was sometimes built flush with the upper level, enclosing more space for the stable and milking area and allowing a second row of stanchions to fit. Windows in all walls were often fitted with new metal-framed, tilting “hopper” style windows for ventilation and light. A failure to comply with these architectural changes could result in a farm receiving a lower rating from regulators, and thus its products being less marketable, with their milk only sold for processing, for example. As such, it is fairly rare to encounter nineteenth-century bank barns with their original wooden fixtures intact in the lower-level stable area, which almost always reflect architectural makeovers from the early decades of the twentieth century.⁵³

⁴⁹ McMurry, “Pennsylvania Farming,” 195.

⁵⁰ McMurry, “Pennsylvania Farming,” 195-196.

⁵¹ See “Department of Dairy Barns,” William Radford, *Radford’s Combined House and Barn Plan Book* (Chicago, IL: Radford Architectural Co., 1908), 115.

⁵² McMurry, “Pennsylvania Farming,” 196.

⁵³ McMurry, “Pennsylvania Farming,” 196-197.



Figure 11. Example of bank barn from the Thomas Farm in Keymar, Maryland that was converted in the twentieth century for dairying. On the lower level of the barn the once over-hanging forebay has been enclosed.

Milk Houses

The milk house, “an unmistakable trademark of the dairy farm,” was an entirely new building that emerged on American dairy farms as a result of government regulations first established during the early twentieth century.⁵⁴ Cool, sanitary spaces were mandated for safer milk storage, architecturally removed from the dirt, animal waste, dust, and smells of the barn’s stable areas—and the associated threats of diseases like tuberculosis. In a milk house, sanitarians theorized, disease and spoilage could be avoided if large cans of milk were cooled and stored in a clean environment until they were shipped to market by truck.⁵⁵ Though comparable perhaps to springhouses in their size and some of their functions, the milk house was a distinctly “modern building” in its standardization, regulation, materials, and design. They were often constructed not

⁵⁴ Noble, 116.

⁵⁵ McMurtry, “Pennsylvania Farming,” 199.

based on local tradition, but on the advice of an agricultural extension agent or government brochure.⁵⁶ Milk houses were typically small, rectangular buildings—usually not larger than about 12 or 15 feet per side—located very close to the barn where milking occurred, or even attached to it by a covered passageway. They were also usually positioned adjacent to a driveway or farm lane to facilitate easy shipping. Usually front-gabled buildings, sometimes with hipped or gambrel roofs, milk houses usually featured main entry doors in the middle of the front gable end.⁵⁷ Many early milk houses were constructed of wood, but concrete block, hollow tile block, and sometimes brick emerged as superior options due to their insulating properties, ease of cleaning, and because temperature differentials and persistent moisture inside could cause problems for wood construction.⁵⁸ Almost all milk houses featured concrete floors, sometimes sloped for easy cleaning. Ventilation devices were almost universal design features, such as gable vents, roof ridge vents, and also several screened windows for both ventilation and light, which was believed to serve as a natural disinfectant. The inside typically included spaces for cooling and storing cans of milk, as well as a sink for washing milk cans and milking utensils, which was often the role of women, who “no longer made butter and cheese,” but “spent hours in those little milk houses cleaning equipment.”⁵⁹ Electrification, once available, quickly improved cooling, lighting, and ventilation inside milk houses.⁶⁰

Bullpens/Bull Barns

Housing bulls in separate buildings was being challenged by some as early as 1908, when Radford Architectural Company suggested bullpens integrated into a dairy barn was the best option, since “a bull needs company just as much as any other animal,” and “a great deal of trouble has come from shutting bulls up in tight pens where they become lonesome and morose.”⁶¹ Large stalls of tubular steel, whether situated in a separate building or incorporated into the dairy barn, was seen as the superior solution to wooden stalls. According to a 1915 catalogue from the Loudon Machinery Company, their steel bull pens (which could also be used for cows, calves, or hogs) were already “being installed by thousands of farmers who find that steel pens cost little more than wood, add attractiveness to the barn, and are more sanitary as they are easy to keep clean.” They added that

⁵⁶ McMurry, “Pennsylvania Farming,” 200.

⁵⁷ Sheppard, 11-12; Visser, 115-117.

⁵⁸ Noble, 116.

⁵⁹ McMurry, “Pennsylvania Farming,” 203.

⁶⁰ McMurry, “Pennsylvania Farming,” 200; Visser 117.

⁶¹ “Department of Dairy Barns,” William Radford, *Radford’s Combined House and Barn Plan Book* (Chicago, IL: Radford Architectural Co., 1908), 134.

steel pens were so strong that they would “never get out of repair and will outlast the average barn.”⁶² They could be ordered in various weights and sizes of steel and customized to fit any space.

Period III: Industrialization, Efficiency, and Consolidation, 1945 to 1985 +/-

After a period of somewhat restrained construction on farms due to the Great Depression and World War II, the decades after the war witnessed several major transformations at many dairy farm complexes. While older dairy-related structures often survived or were repurposed during the 1950s and 1960s, new freestall barns and milking parlors began competing with old stable barns in popularity, while new stainless steel milk tanks replaced milk cans in milk houses, new Harvestore silos (and soon bunker silos) replaced or were built alongside older tile and concrete silos, and new farm ponds, manure lagoons, and manure tanks emerged as common features on Maryland’s dairy farms. The result was a substantial architectural makeover at many dairy farms, as owners invested in new technologies, increased labor efficiencies, and reduced operational costs. Pole construction proliferated across American agricultural landscapes, since building just one-story high with small-dimension lumber and sheet metal—often without foundations, sills, or even flooring—was easier, saved money, and offered more design flexibility. Silos had reduced the need for hay lofts, and, as barn profiles became lower, concrete silos and new Harvestore silos often were constructed bigger, higher, and more numerous than their predecessors, resulting in dairy landscapes dominated visually by clusters of towering silos. The increasingly utilitarian architecture often conjured a more industrialized aesthetic that was lamented by some observers. A 1978 study suggested American dairy farms were increasingly reflecting “a spatial organization similar to that of a suburban manufacturing plant,” mostly “guided by technological factors,” and thus ushering in “a national rural landscape of repetitious building.”⁶³

Harvestore Silos

Concrete stave silos continued to be a popular solution during this era; however, in 1949, the A.O. Smith Corporation began producing the Harvestore silo, a glass-lined steel silo that was designed to be virtually airtight—and soon, its shiny, metallic blue presence transformed agricultural landscapes across the country, becoming an almost ubiquitous presence in dairying regions during the 1960s and 1970s. The Harvestore was touted as offering far superior feed preservation (and thus increased animal nutrition) due to its fiberglass lining, which maintained an airtight environment for the ensilage, while also resisting corrosion and providing

⁶² Loudon Machine Company, *Loudon Barn Plans* (Guelph, Ontario: Loudon Machine Company, 1915), 106.

⁶³ Noble, 47.

insulation to keep feed from freezing in the winter.⁶⁴ Harvestore silos also reduced the risk of accident and saved time by incorporating mechanical unloaders, allowing farmers to remove silage from the bottom of the silo with an automatic auger, rather than by hand from the top of the stored material.⁶⁵ Standing about sixty-one feet high, measuring twenty feet across, and highly recognizable due to its shiny blue appearance, the Harvestore silo had by the 1970s “increasingly come to be the mark of a commercially successful farmer.”⁶⁶ Indeed, costing \$11,302 during the 1960s, about twice as much as comparable concrete stave silos, the Harvestore silo was an investment that was generally affordable for “only the most efficient farmers operating on the largest scale.”⁶⁷ Like concrete silos, Harvestore silos were estimated to have a thirty to forty year life span, but the very high cost to repair their unloader mechanisms was a major factor in their abandonment by many farmers during the 1980s and 1990s, when they quickly fell out of favor. Today, many stand empty and unused, and some have already been torn down as surviving dairy farmers transition to bunker silos.⁶⁸

Bunker Silos / Horizontal Silos

Rectangular bunker silos, much less expensive than Harvestore silos (or any tower silos for that matter), reemerged after World War II and became increasingly popular during the 1970s and 1980s.⁶⁹ Quite simple to construct, bunker silos typically consist of long, rectangular troughs or bunkers, often embanked, and are almost always constructed of poured concrete or precast concrete panels.⁷⁰ Bunker silos are frequently partitioned into multiple, parallel bunkers or stalls, each with a wide opening, allowing silage to be easily loaded and unloaded by a front loader, tractor, or even a dump truck. Since they are open structures, the silage is typically covered with large plastic sheets, and often weighted down with tires, to preserve the silage when it is not being loaded or unloaded. Popularized first in the Midwest during the 1950s, as grass silage operations became more common, bunker silos were appealing to many dairy farmers because they cost significantly less to construct compared to tower silos—about one-third the cost for a bunker silo in the 100 to 300 ton capacity range.⁷¹ The size of bunker silos can also be customized to suit each individual farmer’s needs or herd size. While unlined trench silos, excavated beneath grade, can experience problems such as water infiltration or collapse, concrete

⁶⁴ Visser, 139-140; McMurry, “Pennsylvania Farming,” 346; Noble, 78.

⁶⁵ Visser, 140; Noble, 78.

⁶⁶ Noble, 78-79.

⁶⁷ Noble, 79.

⁶⁸ Noble, 79; McMurry, “Pennsylvania Farming,” 345-346.

⁶⁹ Noble, 79; McMurry, “Pennsylvania Farming,” 346.

⁷⁰ Noble also makes note of above-grade “bunker” silos made of wood and metal. See Noble 79.

⁷¹ Noble, 79-80.

bunker silos offer few disadvantages. However, compared to airtight tower silos, rates of spoilage are higher with bunker silos, which do not keep out the elements as successfully with plastic covering.⁷²

Plastic, or polywrap, also provided the material for a non-structural, non-silo option for storing silage that emerged during the 1980s—the “ag bag.” Ag bags are long, tubular, white plastic bags that can be filled with cylindrical bales of hay, then torn away with perforated sections as the hay is removed for feed. Undried, green hay (or “haylage”) is similarly placed in bags, sometimes smaller in size. This process is sometimes called “wrapping.” Ag bags are marketed as an inexpensive, flexible, airtight solution that reduces waste and preserves silage in an optimal condition. Ag bags do not require indoor storage and can thus be placed anywhere on a farm, allowing for maximum flexibility in storage. This again transformed agricultural landscapes, since the conspicuous white bags became a regular feature dotting the fields of American dairy farms. Large stacks of wrapped bales themselves sometimes “became architecture-scale features in farm fields,” and, since they did not need to be stored indoors, “these bales may have hastened the demise of historic barns.”⁷³

Milking Parlors

The term “milking parlor” can refer to any building, or part of a building, where cows are milked on a dairy farm. However, separate, dedicated structures for milking cows, architecturally removed from stabling areas, emerged after World War II. Unlike old milking spaces in barns, where the milker usually moved from cow to cow and transported milk cans by hand to the milk house, milking parlors served as centralized milking stations that the cows walked to and from. Cows entered these purpose-built milking parlors from one direction, filed into special stalls for milking, then filed out in another direction when finished, allowing a new group of cows to enter. Milking parlors were usually attached to a barn or waiting pen, and awaiting cows would be funneled in. Milking parlors were usually low, one-story structures, built of concrete block, with low-pitched roofs, and finished with easily cleanable surfaces like tile on the interior. Their walls were usually punctuated by many windows or even continuous window features made of glass block, and also illuminated with electric lights. Inside, they typically included a sunken pit or operator’s aisle in the middle, making it easier for the milker to access the cow udders and equipment from below the cow. Labor was also saved by new milking equipment that pumped the milk directly from the cow into milk cans and, later, through tubes directly into bulk milk tanks

⁷² Noble, 80.

⁷³ McMurtry, “Pennsylvania Farming,” 345-346.

in the adjacent milk house.⁷⁴ Common layouts for milking parlors included the slanted “Herringbone” plan, in which cows on both sides of the milking pit lined up at approximately a 45-degree angle, and the “Parallel” (or “Side-by-Side”) plan, where cows stand perpendicular to the milking pit (at a 90-degree angle). Other arrangements include the “Tandem” (or “Side-Open”) plan, where fewer cows stand end-to-end alongside the pit, and the “Rotary” plan, where cows walk onto a rotating platform, facing inwards while being milked.⁷⁵ During the 1970s, the milking process was automated even further in many parlors with the implementation of electronic milking technologies.⁷⁶ Milking parlors were sometimes incorporated into larger buildings that also accommodated farm offices, bulk milk tanks, utility rooms, and/or storage. They also usually featured an attached, covered waiting area (or “holding” area) from which the cows would enter and exit.

Bulk Tanks

By the 1950s, many dairy farmers were moving away from filling dozens of milk cans and instead were incorporating bulk milk tanks—stainless steel refrigerated tanks that could be pumped into a tanker truck that delivered the milk to a distributor or processor. In fact, in many markets, a farmer’s milk could only receive an ‘A’ grade if they used stainless steel bulk tanks.⁷⁷ These large, silver-colored tanks were frequently placed inside the milk house, where cans had previously been stored, sometimes even requiring an expansion or replacement of the milk house (depending on the size of the tank and the milk house).⁷⁸ New structures or rooms that held the bulk tank were also called the “milk house.” The bulk tanks were usually situated directly next to a milking parlor, where milk was pumped directly from the cow, through tubing, into the tank. For both health reasons and labor efficiency, regulators and distributors eventually required all dairy farmers to use these bulk tanks—an expensive innovation that, combined with other necessary upgrades like milking parlors, pushed many dairy farmers out of the business, while others increased their herd sizes and investments in dairy.⁷⁹

⁷⁴ McMurry, “Pennsylvania Farming,” 341-342.

⁷⁵ DJ Reinemann and MD Rasmussen, “Milking Parlors,” pp. 959-964 in *Encyclopedia of Dairy Sciences*, 2nd Edition (Elsevier Science Publishing Co. Inc.: Academic Press, 2011); “Milking Parlor,” PHMC Pennsylvania Agricultural History Project, August 2015, <http://www.phmc.state.pa.us/portal/communities/agriculture/field-guide/milking-parlor.html>.

⁷⁶ Madison Mamie Goulart, “A History, Description, and Comparison of Different Brands of Dairy Parlor Equipment and Which Designs are the Best Fit for Different Sized Dairy Operations,” Senior Thesis, California Polytechnic State University, San Luis Obispo, March 2014, 6.

⁷⁷ McMurry, “Pennsylvania Farming,” 340-341.

⁷⁸ Visser, 100, 117.

⁷⁹ McMurry, “Pennsylvania Farming,” 341.

Freestall Barns

The freestall barn, like the associated bulk tank and milking parlor, was another major architectural innovation after World War II. An article in *Popular Mechanics* in 1948 reported that “an experiment at the University of Wisconsin completely changes the character of the dairy barn,” proving that “cows don’t need stalls.”⁸⁰ Rather than confining cows to narrow stanchions, freestall housing (originally called “loose housing”) allowed cows to roam freely around their shelters in large open spaces, rest in roomy stalls, and feed at will—marking a major departure from previous housing and feeding approaches in bank barns or stable barns. Freestall barns were typically one-story high (there was no need for haylofts due to ample silage and feed inputs) with a shallow pitched roof. While many early freestall barns were constructed with concrete block, most farmers soon switched to less expensive and more efficient pole construction, which was also used for several related animal shelters like loafing sheds, heifer barns, calf barns, and pen barns. Freestall barns of pole construction typically featured light, treated-wood framing, sometimes with roof trusses, clad with metal roofs and lightweight metal siding, though some featured wood or plywood siding. Freestall barns were typically uninsulated, and in fact many featured at least one open side, sometimes with an operable curtain wall, allowing the cows to move freely between interior and exterior.⁸¹ Floors were scored concrete or simply dirt, usually with thick layers of sand and/or straw serving as bedding. Feed and water were available on demand in one section of the freestall barn, which might also feature separate sections to store bedding and/or feed (though many farmers stored these in adjacent structures, like concrete bunkers). Freestall barns reduced labor costs significantly because bedding, feed, and manure could all be moved by machine rather than by hand and feeding chores were less intensive.⁸² As this new system took over, many earlier, purpose-built stable barns built before World War II were renovated into freestall housing by removing stanchions.⁸³ Related, specialized animal shelters like heifer barns, calf barns, and loafing sheds also proliferated during this era, since pole construction was inexpensive and easy to build, allowing more flexibility in housing cows and other animals. Younger cows were usually separated from their older counterparts, while calves were often kept in individual hutches to prevent the spread of contagious diseases.⁸⁴

⁸⁰ Quoted in Visser, 103.

⁸¹ McMurry, “Pennsylvania Farming,” 342.

⁸² McMurry, “Pennsylvania Farming,” 343; Visser 103.

⁸³ Visser, 103.

⁸⁴ McMurry, “Pennsylvania Farming,” 343.

Manure Tanks/Pits/Bunkers/Slurry Stores

Manure piles outside of barns were a common site on dairy farms until the middle of the twentieth century, but this approach to manure storage was considered wasteful by experts due to the significant loss of nutrients through leaching. Even in the early twentieth century, various manure management structures emerged to store and preserve manure until it was utilized as fertilizer.⁸⁵ As early as the 1910s, covered concrete manure bunkers or pits were used for dry manure storage, preserving manure in a more solid state—and even today, similar concrete bunkers are sometimes used to store manure solids.⁸⁶ It was not until the later decades of the twentieth century, however, that many manure management structures became common, especially due to environmental regulations. Factors that led to the widespread adoption of manure management infrastructure during the 1970s and beyond include the 1972 Federal Water Pollution Control Act Amendments, the need for odor control in growing suburban areas, the increasing desire to conserve plant nutrients, and the need to minimize costs.⁸⁷

The simplest and most economical was the manure lagoon, which was essentially a large pit or pond excavated to hold liquid manure, usually constructed to prevent seepage and nutrient loss into the soil below.⁸⁸ More expensive options include fabricated manure storage tanks (or slurry stores), which are typically wide, round structures with impervious floors and vertical walls of concrete or glass-lined steel, the latter being manufactured by the A.O. Smith Company and similar in appearance to the company's shiny-blue metallic Harvestore silos. These slurry tanks can be situated above ground, subterranean, or partially subterranean, and offer the advantages of increased nutrient retention and odor reduction through covering. In 1972, the Clean Water Act instituted control programs for manure management at large farms, due partially to water pollution in the Chesapeake Bay watershed. By 2012, even smaller dairy operations were required to have a Manure Management Plan in place, carefully regulating manure storage facilities.⁸⁹

⁸⁵ Susan Granger and Scott Kelly, *Minnesota Historic Farms Study, Individual Farm Elements*, "Manure Pits or Bunkers," (Gemini Research: Morris, Minnesota, 2008), page 6.325.

⁸⁶ Minnesota Historic Farms Study, *Individual Farm Elements*, "Manure Pits or Bunkers," page 6.325.

⁸⁷ S.B. Nott, D.E. Kauffman, and J.A. Speicher, "Trends in the Management of Dairy Farms Since 1956," *Journal of Dairy Science*, Volume 64, Number 6 (1981), 1332.

⁸⁸ John W. Worley, "Manure Storage and Treatment Systems," University of Georgia Cooperative Extension, August 2009, <https://site.extension.uga.edu/aware/files/2009/08/Manure-Storage-and-Treatment-Systems.pdf>; Don Jones and Alan Sutton, "Manure Storage Systems - Extension - Purdue Extension," Purdue Extension, August 2007, <https://extension.purdue.edu/extmedia/ID/cafo/ID-352.pdf>.

⁸⁹ McMurry, "Pennsylvania Farming," 344-345.

Farm Ponds

Farm ponds became widespread in the middle of the twentieth century and were part of “a broad reworking of twentieth-century agricultural landscapes,” which was “fostered by the so-called ‘conservation-industrial complex.’”⁹⁰ After the New Deal was implemented, farm-pond building was an approved conservation practice by the Soil Conservation Service (SCS), and federal assistance fueled the creation of 2.5 million farm and ranch ponds between 1935 and 2000—with most ponds being installed in the decades after World War II. Stated purposes for farm ponds included livestock watering, soil conservation, and irrigation. The thirty years between 1940 and 1970 marked the “peak years” for SCS-supported farm pond construction, possibly due to the more widespread availability of bulldozers and other heavy equipment to excavate ponds (and also due to new campaigns emphasizing the pond’s added value for fire protection). The proliferation of farm ponds in this era made them “as much a part of the vernacular agricultural landscape as a barn, silo, or woodlot.”⁹¹ Farm ponds are simply small water impoundments, typically created artificially by excavating an earthen pit to be filled with water. They are almost always less than five acres in size and are often considerably smaller. They were filled by pumping from underground, intercepting a small stream, by collecting rainwater, capturing spring water, or by excavating below the water table to expose ground water. Ponds that are created by intercepting an existing stream are called “in-line” ponds, and they are typically easy to identify because they feature a miniature dam at one end, and their shape tapers towards the opposite end, often becoming quite narrow. However, most farm ponds are some sort of “off-line” pond, which utilize gravity, topography, and soil characteristics to pool rainwater runoff, spring water, or collect groundwater.⁹² The siting and design of a farm pond would reflect its primary intended use, and ponds meant to provide water to livestock were usually located in pastureland, sometimes at a distance from the main cluster of the farm complex (while ponds intended more for recreation, like swimming and fishing, were often located closer to the dwelling).⁹³ While they were originally highly promoted for soil conservation and livestock watering purposes, ponds were frequently viewed as much as a recreational amenity than an agricultural resource.

Offices

Detached, standalone office buildings were relatively scarce on dairy farms, and where they did exist, they were likely constructed during the 1970s or afterwards. However, many offices were included in multipurpose

⁹⁰ Sally McMurry, “The American Farm Pond,” *Buildings & Landscapes: Journal of the Vernacular Architecture Forum*, Volume 27, Number 2, pp. 39-58, 39.

⁹¹ McMurry, “Ponds,” 40; 45-46; 48.

⁹² McMurry, “Ponds,” 40.

⁹³ McMurry, “Ponds,” 41.

buildings such as milking parlors after around 1950, while other offices or office spaces were incorporated into stable barns, bank barns, or as appendages of these barns or other structures.

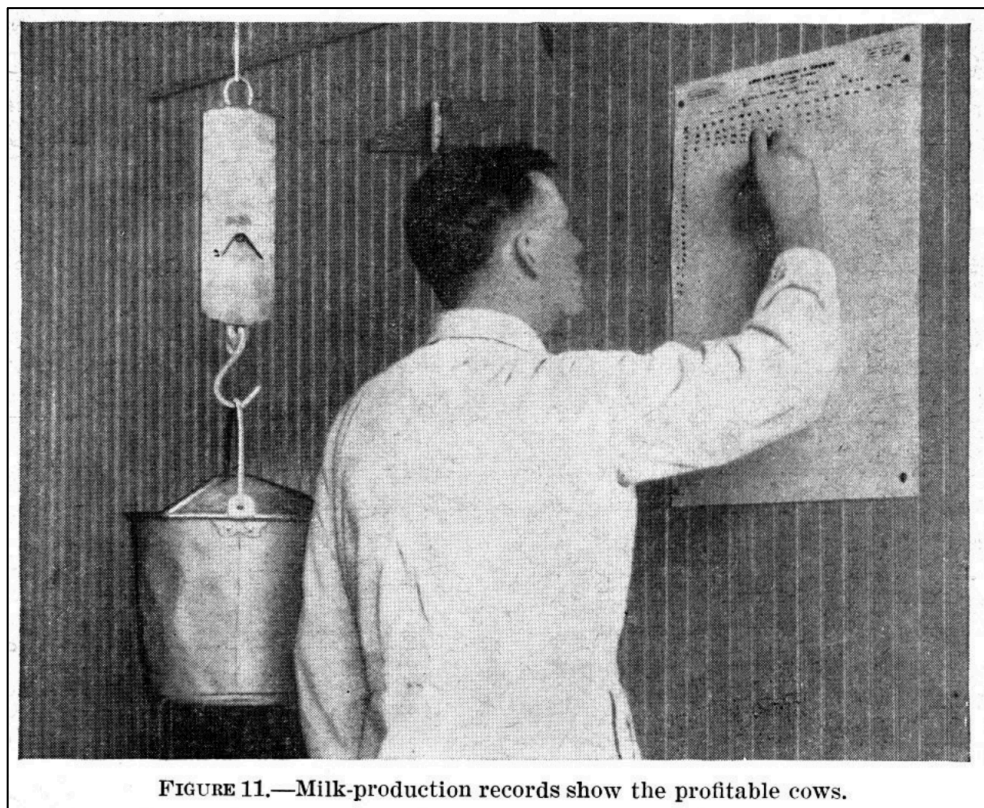


FIGURE 11.—Milk-production records show the profitable cows.

Figure 12. Record keeping was often accomplished at informal office spaces within the barn or milking parlor. From US Department of Agriculture, Care and Management of Dairy Cows (Farmer's Bulletin No. 1470), June 1959.

Bottling Facilities

Most dairy farmers did not bottle their own milk, and thus did not require their own bottling facilities—but there were a small number of farmers that did operate them on their farms, bottling their own milk and often the milk of other nearby dairy farmers. These were typically modest-sized, standalone buildings that featured at least one loading dock to facilitate the movement of milk containers, machinery or conveyors inside to fill individual bottles of milk, and spaces for refrigeration.

National Register of Historic Places—Eligibility of Maryland Dairy Farms

Maryland’s dairy farms, including several documented during this survey, may be eligible for the National Register of Historic Places through several distinct avenues or categories of qualification. First, some dairy farms might be strongly representative of a single era of dairy farming, retaining an extraordinary level of integrity as an overall farm complex by retaining a high number of buildings and structures from a single phase of dairy farming. Secondly, other dairy farms might retain a wider variety of resources that represent multiple eras of dairy farming, and thus possess several layers of construction and significance, demonstrating how Maryland’s dairy farms evolved and adapted over several decades of change in order to keep pace with regulations and market demands. Lastly, single historical structures related to dairy farming may be individually eligible for the National Register if they represent a rare or singular survival of a particular design, possess a remarkable level of integrity, or survive as the only extant element of a particularly important dairy operation.

To be eligible for listing in the National Register of Historic Places, the historic resource(s)— districts, sites, buildings, structures, and landscapes—must be at least 50 years old (or older) and have significance to one (or more) of the following criteria:

- A. Properties that are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. That are associated with the lives of persons significant in our past; or
- C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. That have yielded, or may be likely to yield, information important in prehistory or history.⁹⁴

Criterion A

Maryland dairy farms may be eligible for listing in the National Register under Criterion A for their association with the development of the dairy industry at the local, state, or national level. The dairy farms, including the dairy barns, milk houses, silos, parlors, and freestall barns, are all important physical manifestations of the history of dairy farming in Maryland, and in some cases the evolution of dairy farming technologies and

⁹⁴ National Park Service, National Register Bulletin 15, “How to Apply the National Register Criteria for Evaluation,” 1990, revised 1991, 1995, and 1997, 2.

regulations. Dairy farm complexes may feature buildings and structures that represent one, or several, historical eras of dairy farming.

Criterion B

Dairy farms may be eligible under Criterion B if they are associated with a person who made a significant contribution to the development of dairy farming, or the dairy industry, at the local, state, or national level. The property must be linked with the person during the time period that the contributions were made.

Criterion C

The architecture of dairy farming is highly entwined with the history of the industry, and as such, historical and architectural significance may substantially overlap. A dairy farm complex might qualify for the National Register under Criterion C, alone, for possessing a high level of overall integrity as a complex, especially when retaining key features as well as ancillary structures that contribute to an exceptionally cohesive agricultural landscape. Architecturally distinctive farms or structures, especially when they possess high level of integrity, may be eligible under Criterion C for their exceptional design qualities or for being a rare survival of a particular design or approach to dairy farming.

Criterion D

Deriving significance under this Criterion would apply to archaeological resources, as well as the intact nature of the archaeological deposits.

It is recommended that most dairy farms in Maryland be evaluated under both Criteria A and C for agricultural history and architecture. For all periods of dairy farm history, the key architectural features a complex must include milking facilities (stanchion barn, bank barn, milking parlor, etc.), stabling/housing facilities (stanchion barn, freestall barn, etc.), and feed/silage storage infrastructure (grain bins, silos).

Contributing and Noncontributing Resources

Individual resources are identified as contributing or noncontributing to the significance of a dairy farm based on their age, function, level of integrity, as well as historic associations. Generally, those resources that were built during a property's period of significance would be considered contributing. Some properties might have long periods of significance that span two or more time periods identified in the context—those resources should be considered contributing. Modern resources (less than 50 years old), even if dairy related, are generally considered noncontributing resources. If a resource has been substantially altered since the period of significance, and generally obscures its function, these resources would also be likely noncontributing. With active dairy farms it is important to consider that change is often a characteristic of these farms, especially the

ones that span multiple time periods from the historic context. Changing purpose, use, or function does not automatically make a resource noncontributing, however, it is important to know when the change occurred (i.e. during the period of significance or after), and whether the resource still retains its material integrity.

Integrity

To be considered eligible for listing in the National Register of Historic Places, a property must both be determined significant under the National Register Criteria for Evaluation and exhibit integrity, which is defined by the National Register as “the ability of a property to convey its significance.”⁹⁵ While the evaluation of a property’s integrity is sometimes subjective and arguably nuanced a property retaining historic integrity will “possess several, and usually most, of the aspects,” of which there are seven: location, design, setting, materials, workmanship, feeling, and association.⁹⁶

1. Location refers to the place where the building was constructed. A dairy farm should retain its original location to retain integrity of location.
2. Design refers to the combined elements of a building that create its form, plan, space, structure, and style. Dairy farms should retain the design of key architectural features associated with dairy farms especially the bank barn, dairy barn, milk house, silo, freestall barn, parlor, etc. For these individual buildings their siting, plan, massing, and fenestration should remain legible. The dairy farm as a *complex* should also retain its design. Dairy farms all have their own layout (relationship between buildings, structures, sites, and objects), and this layout should be retained to have integrity of design. This relationship between buildings is critical to understanding how dairy farms functioned.
3. Setting refers to the general environment of a building and its surroundings, how is it situated or positioned and its relationship to other buildings, space, and features. While it is recommended that dairy farms retain some of their historic acreage, as well as a rural setting, development pressures in many parts of Maryland have made the retention of large agricultural settings impossible for some potentially eligible dairy farms. If a rural setting, and farm acreage hasn’t been retained, enough integrity of setting can still be achieved through a buffer of open space, along with the retention of key farm features (barn, milk house, silo, freestall barn, parlor, etc.). These key dairy farm features must retain their own integrity of design as well.

⁹⁵ National Register Bulletin 15, “How to Apply the National Register Criteria for Evaluation” (Washington, D.C.: U.S. Department of the Interior, National Park Service, 1997), 44.

⁹⁶ National Register Bulletin 15, 44.

4. Materials refers to the physical elements used to create or design a building during the period of significance, particularly those visible on the exterior. The presence of original materials, or materials added during the period of significance (i.e. a bank barn converted to dairying) must be retained. Materials help date and understand the evolution of Maryland's dairy farm. In some cases, modifications after the period of significance are acceptable to retain some level of material integrity, especially if the farm is currently an operating dairy farm.
5. Workmanship refers to the physical evidence of the skill and labor employed in the construction or alteration of a building, considering it as a whole or its individual elements. Workmanship can be expressed through both simple and decorative finishes, and both vernacular and innovative methods of construction. A building should reflect the workmanship of its period of significance.
6. Feeling refers to the building's expression of aesthetic or sense of historic character, relevant to its period of significance, conveyed through a combination of physical features. To retain integrity of feeling, a dairy farm in Maryland should retain enough of the physical characteristics from the farm's period of significance to convey its historical character and association.
7. Association refers to the link between a building and its historic significance. Like feeling, to retain integrity of association, a dairy farm needs to convey its broad patterns and trends, or historical events. Therefore, enough of the material fabric (buildings, farm layout, etc.) needs to be retained to convey the farm's association with the dairy industry.

When assessing historic integrity of a dairy farm, especially an active dairy farm, it is important to consider that farms were built with the expectation that they could be altered to meet the changing needs of the farmer. Modifications in form and materials to any resource during the farm's period of significance may have gained historical significance as a reflection of the property's continued agricultural use or as a sign of technological advancement, or as a response to changing government regulations. It is therefore necessary in the evaluation of integrity for dairy farms to accommodate the need for change.

Results of the Fieldwork Investigation

Location and Description of Surveyed Properties

Carroll County Farms

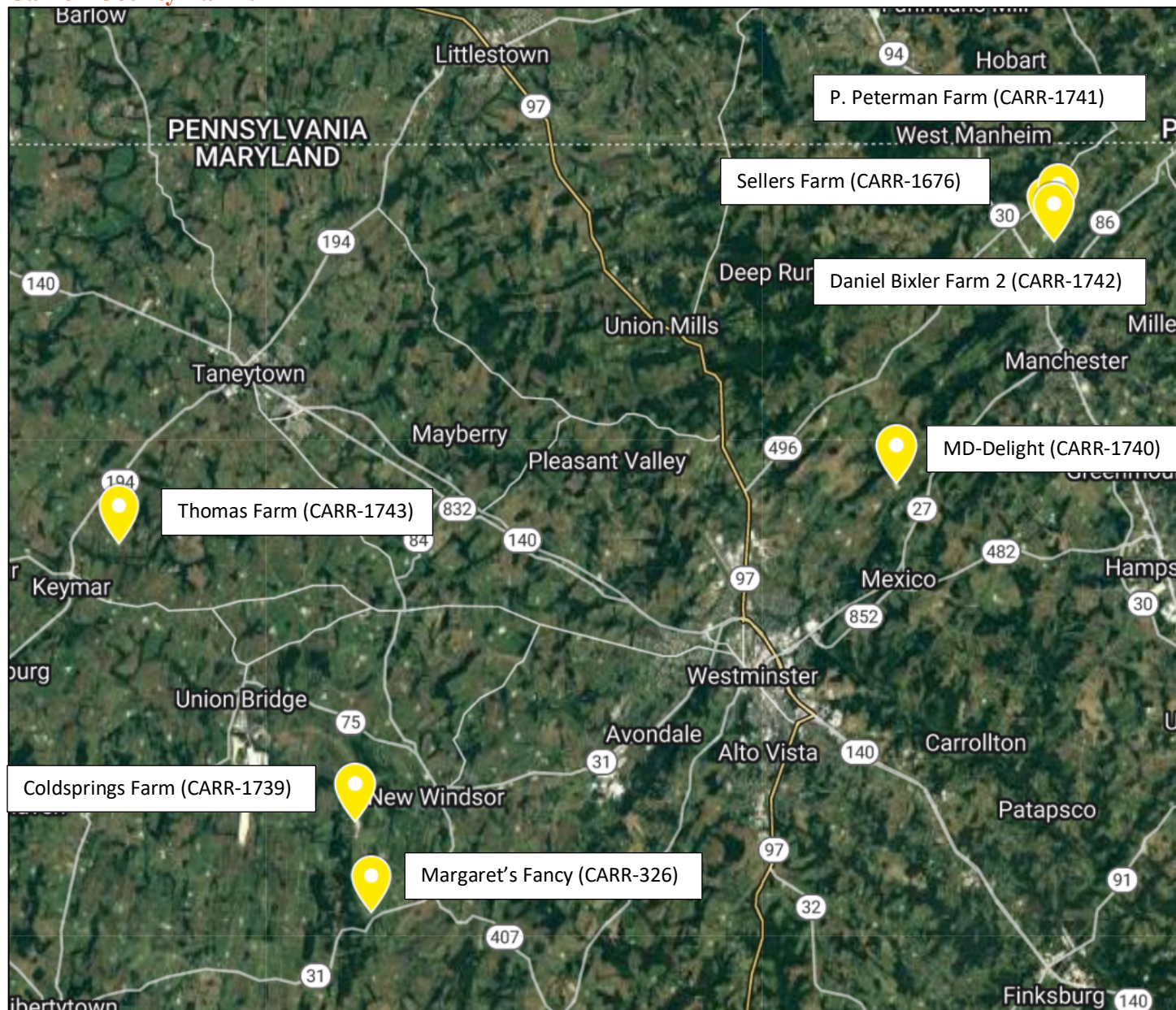


Figure 13. Map showing the location of the five surveyed dairy farm properties in Carroll County, Maryland (Source Google Maps).

Margaret's Fancy (CARR-326, 327)

3800 Sams Creek Rd.

New Windsor, Carroll County, MD

Early-19th century-present

Access: Private

National Register Eligible: Yes

Margaret's Fancy, also known as Roop Farm, Englar's Mill, Englar Farm, and Brookland Farm, occupies over 98 acres on the north side of a bend in Sams Creek Road across from Englar's Mill and Sams Creek in New Windsor, Carroll County, Maryland. Buildings and structures are arrayed around a paved farm drive that runs north from Sams Creek Road, looping around a c. 1830-1840 century wagon shed. The property contains a total of 15 buildings and two structures, including an early-19th century brick dwelling and a sizable 1896 bank barn. The property has been in the possession of the Englar/Roop family since 1881. Dairying was initiated on the site by Ralph Geiman Roop c. 1910. The family operated a bottling facility here between 1937 and 1944, processing milk primarily from the Margaret's Fancy Farm but also from additional Roop farm holdings and other local dairies under the company name Carroll Farm(s) Dairy. The current owner is Roger Thor Roop, son of Roger Gary and grandson of Ralph Geiman.



Figure 14. Aerial view of Margaret's Fancy, taken from the south, looking northwest (Michael J. Emmons, Jr. 2021).

Coldsprings Farm (CARR-1739)

3901-B Hawks Hill Rd.

New Windsor, Carroll County, MD

Early-19th century-present

Access: Private

National Register Eligible: No

Coldsprings Farm is an active dairy farm in New Windsor vicinity, Carroll County, Maryland. The farm is bifurcated by Hawks Hill Road into two distinct sections of the property and sited east of Hoke Road, encompassing 188.26 acres. To the north, east, and south the property is bounded by farmland—the majority of which is owned by the Hoff family, and part of their larger land holdings. To the east the farm is mostly bounded by Hoke Road, however to the northwest, the property is also pounded by Hawks Hill Road, as the road bends. Coldsprings Farm remains in operation and milks 1200 cows three times daily. Today, the farm complex contains 25 buildings, 15 structures, and 2 landscape features and is the largest active dairy farm in Carroll County.



Figure 15. Aerial view showing the Coldsprings Farm showing the center of the dairy complex, looking northeast (Michael J. Emmons, Jr. 2021).

MD-Delight (CARR-1740)

1436 Sullivan Rd.

Westminster, Carroll County, MD

Mid-19th century-present

Access: Private

National Register Eligible: Yes

MD-Delight Farm is an active dairy farm located on both the north and south side of Sullivan Road, in Westminster, Carroll County, Maryland. The farm complex is bisected by Sullivan Road. On the north side of the road, the farm driveway runs to the northwest. The bank barn and milking parlor stand on the southwest side of the driveway and the brick dwelling to the northeast. The bank barn has shed additions to the southwest, as well as two silos. The drive through corncrib is located to the north of the bank barn along the driveway, opposite the two garage buildings. A shed stands to the northwest of the corncrib, with three machine sheds to the north at the end of the farm driveway, located to the northwest of the dwelling. Another storage shed is also located to the west of the bank barn. A large farm pond is situated to the east of the dwelling and the farm complex is surrounded by agricultural fields. The contemporary dairy complex is located on the south side of Sullivan Road. There is another short farm driveway heading south to another milking parlor and a metal frame calf barn. The milking parlor has a freestall holding barn addition to the south. Two silos stand to the west of a cow run separating the silos from a larger metal frame freestall cow barn standing to the southeast of the milking parlor. An even larger metal frame freestall cow barn is located to the southwest with an additional two silos appended to its northwest end. There is a slurry pit on the southeast side of the barn. Another farm pond is located to the southeast of the dairy complex. MD-Delight Farm 132.4-acres and is still an active dairy farm with 80 Holstein and Jersey cows. The Dell Family farms about 2,700-acres in total. Soy, corn, and sorghum are also produced at MD-Delight Farm. Today, the farm complex contains 17 buildings, nine structures, and two farm ponds.



Figure 16. Aerial view of MD-Delight, showing both the Period II and Period III dairy complexes, looking northwest (Michael J. Emmons, Jr. 2021).

Thomas Farm (CARR-1743)

6210 Sharrett Rd.

Keymar, Carroll County, MD

Early 19th century-present

Access: Private

National Register Eligible: Yes

The Thomas Farm complex stands on 175 acres along Sharrett Road—an unpaved farm lane—in rural Keymar, Carroll County, Maryland. The property sprawls to the north and south of Sharrett Road, nestled into cultivated fields and pasturelands that slope gently toward the east. The parcel is bordered on the south by the heavily tree-lined Big Pipe Creek. The complex was operated as a dairy farm for most of the years between 1917 and 2006, after which the current owner, Jake Thomas, discontinued dairy production at the site. The stone farmhouse on the property dates to the mid-1820s and stands to the north of Sharrett Road, across from the dairying complex. The property contains a total of six buildings and three structures, along with the remains of a large trench silo to the west of the freestall barn.



Figure 17. Aerial view showing the Thomas Farm, looking southwest (Michael J. Emmons, Jr. 2021).

Panora Acres / Sellers Farm (CARR-1676)

3000 Traceys Mill Rd.

Manchester, Carroll County, MD

Early-19th century-present

Access: Private

National Register Eligible: Yes

Panora Acres is an active dairy farm comprised of multiple farms totaling 2000 acres. The home farm, also called the Sellers Farm, is a 122.2-acre farm located to the north of Traceys Mill Road, at the eastern edge of the village of Melrose, in the vicinity of Manchester, Carroll County, Maryland. The home farm is contiguous with the Panora Acres “Back Farm” (P. Peterman Farm / CARR-1741) to the northwest, as well as the Panora Acres south farm, Daniel Bixler Farm 2 (CARR-1742), to the southeast. To the southeast, the farm is bounded by the village of Melrose, and to the northwest, the farm is bounded by another 43.21-acre farm. The farm complex is sited far off the road, north of the South Branch of the Little Gunpowder Creek, as well as the former line of the Bachman Valley Railroad (now removed). The farm driveway intersects with Traceys Mill Road and runs downhill to the northwest. The farm lane turns to the northeast after the historic house and swings around the bank barn and milk house, making a half circle, before branching off into two lanes. One lane continues to the northwest past the entire farm complex before turning to the northeast, connecting the Sellers Home Farm to the Back Farm. The other branch continues into the farm complex, providing access to the interior farm complex. The oldest buildings on the farm are sited closest to the front of the parcel, while the dairy farm complex sprawls out behind it to the northwest and northeast. The home farm of Panora Acres is 122.2 acres and remains an active dairy farm, milking 330 Holsteins twice a day. Today, the farm complex contains 22 buildings, and eight structures.



Figure 18. Aerial view of the Sellers Farm, showing the P. Peterman Farm CARR-1741 in the background, looking northeast (Michael J. Emmons, Jr. 2021).

Panora Acres / P. Peterman Farm (CARR-1741)

3010 Traceys Mill Rd.

Manchester, Carroll County, MD

Mid-19th century-present

Access: Private

National Register Eligible: No

The “Back Farm” at Panora Acres, also known as the P. Peterman Farm, is part of a working dairy farm, and is an 83.3-acre parcel of land in the vicinity of Manchester, Carroll County, Maryland. This property is contiguous with the Panora Acres home farm to the northeast and is connected to it by an interior farm road that runs northeast of the main farm complex to the Back Farm. The property is roughly bounded to the southeast by a 28.89-acre tract of land also owned by Panora Acres (tax identifier 06-071341), to the southwest by the historic core of Panora Acres, known as the Sellers Home Farm (CARR-1676), and to the northeast and northwest by smaller tracts of land containing single-family houses. The property was purchased by Panora Acres, Inc. (the Sellers family) in 1998. Today, this portion of Panora Acres contains a farm complex with six buildings, five structures, and a one landscape feature.



Figure 19. Environmental view of the P. Peterman Farm, showing the bank barn in the background and a modern heifer barn in the foreground, looking northwest (Michael J. Emmons, Jr., 2021).

Panora Acres / Daniel Bixler Farm 2 (CARR-1742)

3005 Traceys Mill Rd.

Manchester, Carroll County, MD

Late-19th century-present

Access: Private

National Register Eligible: No

This 60.51-acre parcel is the southern portion of land associated with Panora Acres, a working dairy farm in the vicinity of Manchester, Carroll County, Maryland. The property, also called Daniel Bixler Farm 2, straddles Traceys Mill Road to the northwest and southeast of the road. The property today is roughly bounded by the Panora Acres home farm parcel (Sellers Home Farm, CARR-1676) to the northwest and partially to the northeast. Also bounding this parcel to the northeast is the Peter Benjamin Farm (CARR-1288). To the southwest, the parcel is bounded by a few small parcels of land which contain single family dwellings, as well as a portion of the R. Schaeffer Farm (CARR-637). To the southeast, the parcel is largely bounded by a forested tract of land and one single-family dwelling. The property was purchased by the Sellers family in 1952, and the land was formerly incorporated with the northern portion of Panora Acres in 1967. Today, this portion of Panora Acres is 60.51 acres, and the farm complex contains six buildings.



Figure 20. Environmental view of the Daniel Bixler Farm 2, looking southeast from the P. Peterman Farm (CARR-1741) (Michael J. Emmons, Jr. 2021).

Cecil County Farms

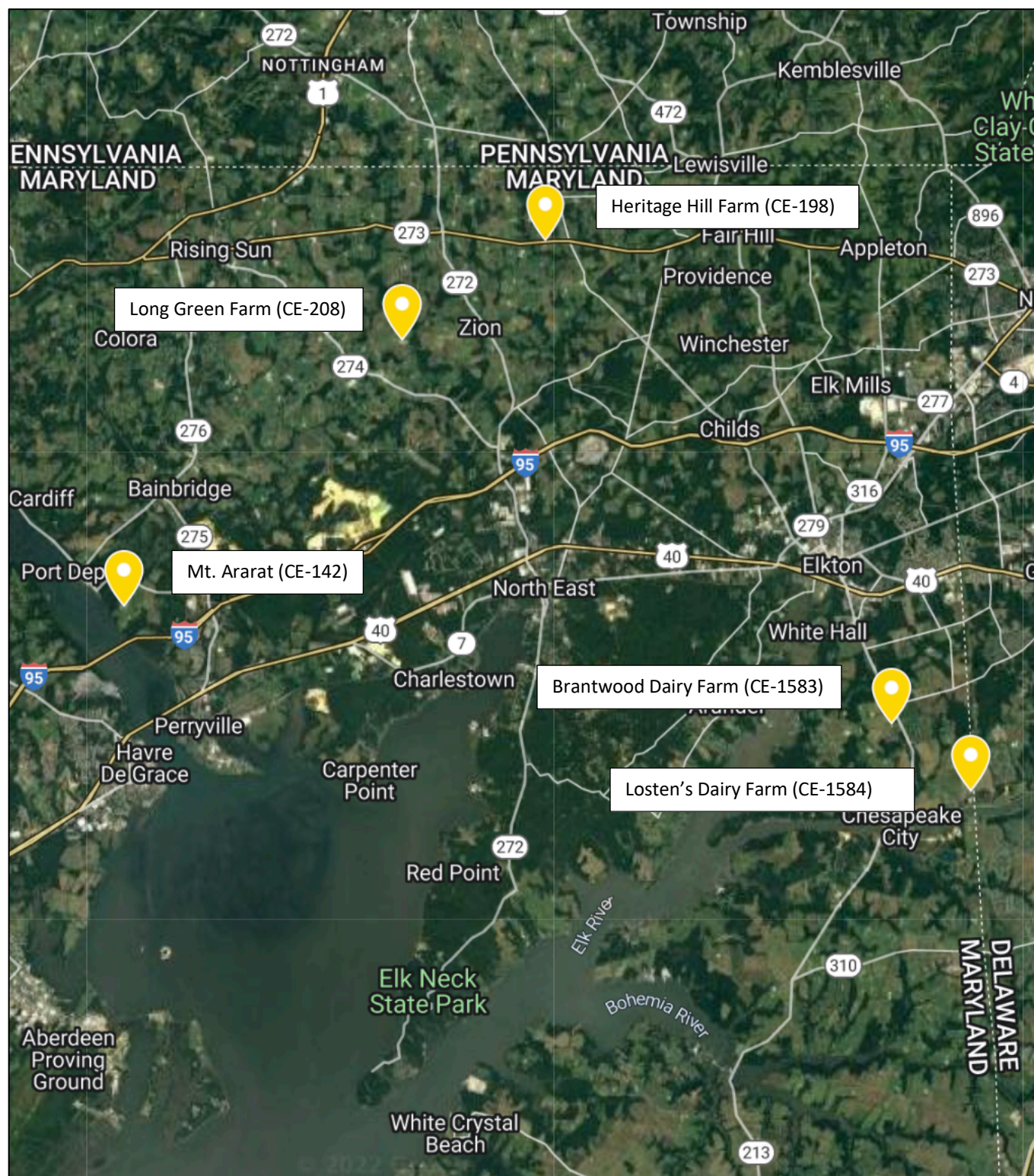


Figure 21. Map showing the location of the five surveyed dairy farm properties in Cecil County, Maryland.

Mt. Ararat (CE-142)

155 Mt. Ararat Farm Road

Port Deposit, Cecil, MD

Early-19th century-present

Access: Private

National Register Eligible: Yes

Mt. Ararat Farms is a former dairy farm and bottling facility, perched on the eastern banks of the Susquehanna River, in the vicinity of Port Deposit, Cecil County, Maryland. The majority of the property, and the entire agricultural complex, is located to the southeast of Frenchtown Road, with some agricultural fields lying to the northwest of the road. Mt. Ararat Farm Road bisects the entire property (on both sides of Frenchtown Road) and terminates at the Donaldson Brown Center owned by the University of Maryland. The building is a large Colonial Revival dwelling (CE-1438) on a 23.426-acre parcel that was once part of the Mt. Ararat Farms complex but was willed to the University in 1966. The property today is roughly bounded to the southwest by the Donaldson Brown Center property and the Susquehanna River; to the south by I-95; to the east by a small residential development south of Frenchtown Road; and to the northeast by Frenchtown Road. A small portion of the large farm lies on the northeast side of Frenchtown Road—it is roughly centered around Mt. Ararat Farm Road, crossing over Bainbridge Road to the north. After F. Donaldson Brown purchased the farm in 1934, Mt. Ararat Farm Road was realigned to run to his newly constructed house. Previously, the entrance to the farm would have come from farther north and traveled southwest into the historic farm complex. Mt. Ararat Farms ceased bottling and distributing milk on July 1, 1979, and in 2017, the current owners stopped dairying. Today, the farmland and some of the historic barns are leased to a tenant. Mt. Ararat Farms is currently 631.86 acres, and the farm complex contains 25 buildings, 15 structures, and two (known) sites.



Figure 22. Environmental view of the historic core of the Mt. Ararat dairy farm, looking west (Michael J. Emmons, Jr., 2021)

Heritage Hill Farm (CE-198)

2745 Telegraph Road

North East, Cecil County, Maryland

Mid-19th century-present

Access: Private

National Register Eligible: No

Located in Rising Sun, Maryland, and dominated by its large dairy barn and Georgian-style dwelling, Heritage Hill has been an operational farm since at least the middle of the nineteenth century, functioning as a dairy farm since at least the early-twentieth century. The Moore family, who has owned the land since 1957, engaged in dairy production until the late 1980s. The property is comprised of approximately 150 acres bisected by Telegraph Road. The 1842 dwelling and several modern buildings are located to the north of the road, while the c. 1927 dairy barn, the associated milk house and silo, a c. late-nineteenth century granary, and a hog house of similar genre stand south of the road. A total of twelve buildings and seven structures stand on the property. Today, the property owners continue to farm the land and now raise sheep and alpacas.



Figure 23. Aerial view of the Heritage Hill farm, looking east (Michael J. Emmons, Jr. 2021).

Long Green Farm (CE-208)

490 Crothers Road

Rising Sun, Cecil County, Maryland

Late-18th century-present

Access: Private

National Register Eligible: Yes

Long Green Farm is an active dairy farm, bifurcated by Crothers Road, in the vicinity of Zion, Cecil County, Maryland. The entirety of the farm buildings are sited to the south of Crothers Road, with agricultural fields on the north and south sides of the road. To the east, both sides of the property are bounded by the North East Creek. To the north, northwest, west, and southwest, the property borders other agricultural lands owned by Long Green Farm, Inc. To the southeast is a residential subdivision that was built c. 2001. There are three driveways that lead from Crothers Road south to the agricultural complex. The first driveway to the east, which runs roughly perpendicular to the road, provides access to the silage complex. The second driveway provides access to the historic core of the farm, including the oldest dwelling, the bank barn, the milking parlor, and the freestall barns. This driveway turns 90 degrees to the west, behind the houses, and runs to the north of the barn. The driveway turns 90 degrees to the north, past the tenant house and the early-twenty-first century dwelling, back out to Crothers Road—creating the third point of entry to the farm. Long Green Farm is 191 acres and part of a larger 560-acre farm called Long Green Farm, Inc. Today, Long Green Farm complex has 24 buildings and 11 structures.



Figure 24. Aerial view of Long Green Farm, looking south (Michael J. Emmons, Jr., 2021).

Brantwood Dairy Farm (CE-1583)

1195 Augustine Herman Highway

Elkton, Cecil County, Maryland

Early-20th century-present

Access: Private

National Register Eligible: Yes

Located 1.6 miles south of the town limits of Elkton, Cecil County, Maryland, Brantwood Dairy Farm is comprised of nearly 180 acres. The farm is dominated by a dairying complex composed of seven interconnected sections and surrounded by cultivated fields. It is approached from the east by an extended drive that turns off the west side of Augustine Herman Highway. Set well back from the highway, the complex runs parallel to and is oriented towards it. The property operated as a dairy from the early-twentieth century until the late-1970s. The current owners produce corn and soybeans on the land. The dairy complex has been maintained, although flaking whitewash, falling ceiling panels, and neglected windows on the interior speak to its decades-long disuse. An early-twentieth century two-story, frame dwelling (CE-1540), built c. 1920 and known as the Lindsay House, was once associated with the property. The house was built by Wallace Williams in the early 1920s and occupies the lot of the old Universalist church.⁹⁷ It is now on a separate parcel and stands at the head of the driveway, as does a more recent detached garage associated with the house. A nineteenth century frame dwelling to the east of the complex, along the drive, was demolished in 2001.



Figure 25. Aerial view of the purpose-built dairy barn, and milk house at the Brantwood Dairy Farm (Michael J. Emmons, Jr., 2021).

⁹⁷ A. C. Simpers, "A Trip Through Cecil. Red Letter Day in the Life of a Bohemian," *The Cecil Whig*, Elkton, Maryland, Oct. 1, 1898; "June Meeting of Cecil Farmers' Club," *Midland Journal*, Rising Sun, Maryland, August 13, 1926.

Losten's Dairy Farm (CE-1584)

1059 Biddle Street

Chesapeake City, Cecil County, Maryland

Early-20th century-present

Access: Private

National Register Eligible: Yes

Losten's Dairy Farm is a former dairy farm and bottling facility, located on the north side of Biddle Street in Chesapeake City, just north of the Chesapeake and Delaware Canal, in Cecil County, Maryland. The Losten's Dairy Farm property, totaling 506 acres, is comprised of three parcels and is located in both Maryland and Delaware. Two of the parcels are located in Maryland—the main parcel (with the farm complex) is 198 acres, and the second parcel to the north is an additional 175 acres of agricultural fields. The remaining 133 acres are in Delaware (the Delaware portion of the farm has been placed into agricultural easement). The entire farm parcel is bounded by Biddle Street to the south, Steele Street (in Delaware) to the east, and Woods Street to the north. To the northwest, the property is bounded by Long Creek; at the western corner of the property, the farm is bordered by a residential property; and to the southwest, it is bordered by Knights Corner Road. The property has two driveways, one for the dwelling and garage to the southwest, and another for the farm complex to the northeast. The agricultural buildings are located to the east and west sides of the driveway. About 90 yards from Biddle Street, a secondary driveway perpendicularly intersects the primary driveway. The oldest buildings at Losten's Dairy Farm are located on this secondary portion. The Losten's Dairy Farm is still an active farm today, growing mostly corn and soybeans. The dairy farm and bottling operations ceased in 1965. The farm has 18 buildings, two structures, one site, and one object.



Figure 26. Aerial view of the Losten's Dairy Farm, looking north (Michael J. Emmons, Jr. 2021)

Frederick County Farms

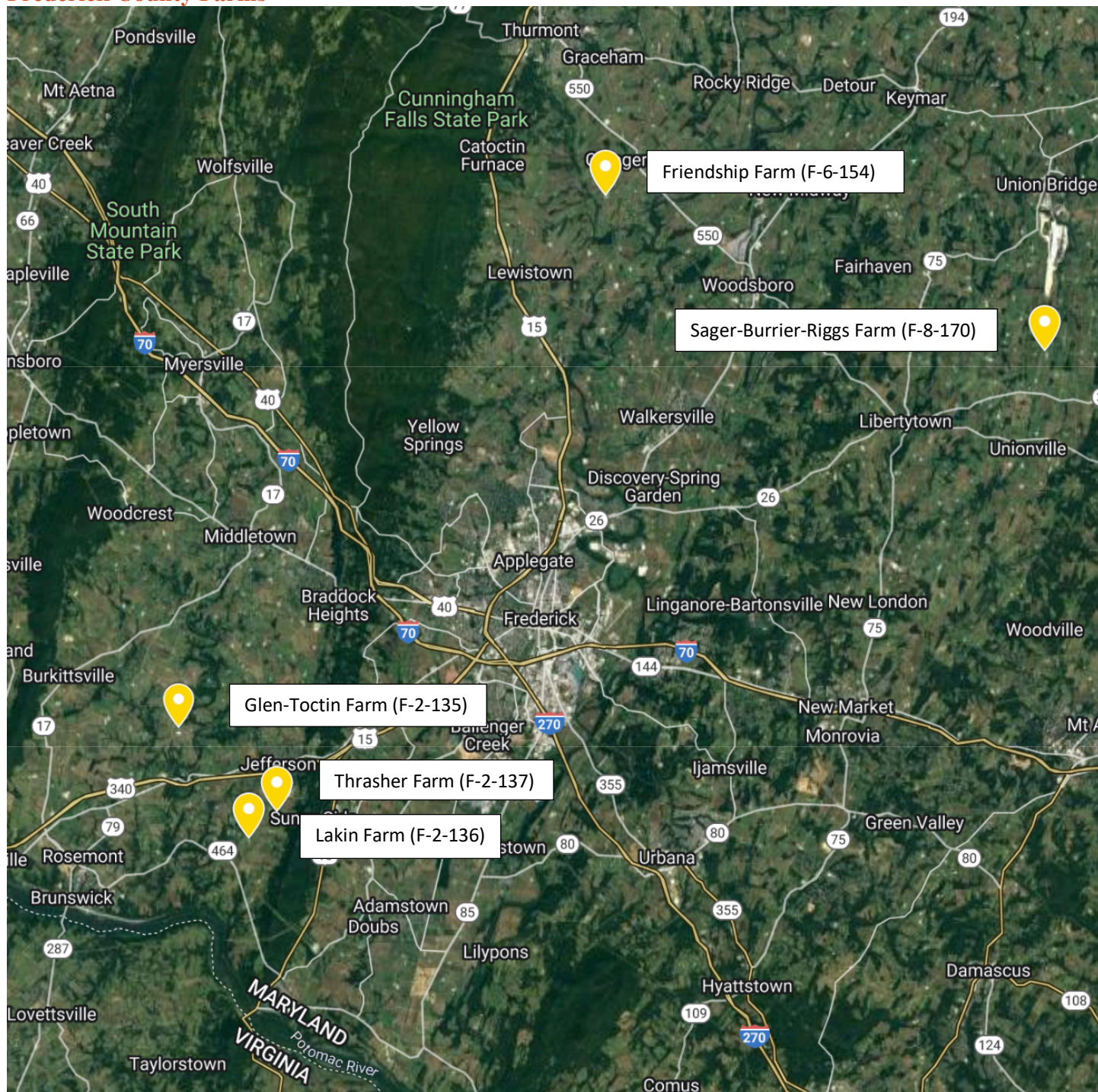


Figure 27. Map showing the location of the five surveyed dairy farm properties in Frederick County, Maryland (Source Google Maps).

Glen-Toctin Farm (F-2-135)

5150 Broad Run Rd.

Jefferson, Frederick County, MD

Early-20th century-present

Access: Private

National Register Eligible: Yes

Glen-Toctin Farm is an active dairy farm, located both on the north and south side of Broad Run Road, in Jefferson, Frederick County, Maryland. The property is bisected by Broad Run Road to the north and south, as well as to the east by St. Marks Road. The farm is bounded by farmland on all sides. The entirety of the dairy complex is located to the south of Broad Run Road, and to the east of St. Marks Road. The property is accessed via a paved driveway off of Broad Run Road. The farm driveway runs to the southeast and then turns about 30 degrees to the southwest, with a portion of the driveway stopping at the c. 1950 dairy barn. The driveway turns again about 90 degrees to the west and runs to the north of the 1992 milking parlor and the 2002 freestall barn. At the edge of this barn, the driveway turns 90 degrees again, this time to south, and continues south past the bunker silos and turns 90 degrees to the east in front of the calf pen. The driveway turns again to the east of the calf pen, 90 degrees to the north, running between the machine shed and the hay barn, turning again 90 degrees to the east, where the road terminates behind the c. 1950 dairy barn. The entire farm complex is sited to the south of Broad Run Road. Glen-Toctin Farm is 170.25 acres and is still an active dairy farm, with 140 cows and 120 heifers. Today, the farm complex contains 16 buildings, four structures, one cemetery, and one farm pond.



Figure 28. Aerial view of Glen-Toctin Farms, looking southeast (Michael J. Emmons, Jr., 2021).

Lakin Farm (F-2-136)

3719 Lander Road

Jefferson, Frederick County, MD

Mid-nineteenth century-present

Access: Private

National Register Eligible: Yes

The Lakin Farm is a former dairy farm, located on the east side of Lander Road, in Jefferson, Frederick County, Maryland. The entire western border of the property is demarcated by Lander Road, and to the north and east, the property borders Fry Road. A rectangular 2.37-acre parcel, carved out of the property's eastern boundary that borders Fry Road, contains a modern dwelling also owned by James Lakin. The southeastern and southwestern boundaries border adjoining agricultural properties. The property is accessed via a paved driveway off of Lander Road. The farm driveway runs to the southeast and then turns about 90 degrees to the southwest, running up a small hill between the dwelling house to the west and most of the agricultural complex to the east. The farm driveway continues to the top of the hill and turns again to the southeast in front of the milking parlor and terminates further to the southeast at the freestall barn. The entire farm complex is sited at the top of a small hill, with its buildings and structures located to the east of the dwelling house and the farm lane, except for the milking parlor, milk house, and two early silos, which are located behind the house. The Lakin Farm, which is 146.37 acres, is still an active beef cattle farm, although dairy operations ceased at the property in 1996. Today, the farm complex contains 11 buildings, four structures, one building foundation, and one building ruin.



Figure 29. Aerial view of the Lakin Farm, looking south (Michael J. Emmons, Jr., 2021).

Thrasher Farm (F-2-137)

4101 Lander Rd.

Jefferson, Frederick County, MD

Late-18th/early-19th century-present

Access: Private

National Register Eligible: Yes

The Thrasher Farm occupies just over 187 acres to the east of Lander Road in Jefferson, Frederick County, Maryland. Buildings and structures are located along the north and south of a long farm drive that runs perpendicular to Lander Road. The property contains a total of twelve buildings and structures, along with two farm ponds, one to the southeast of the dairy barn complex and the second to the southwest of the stone dwelling. Two dwellings are located on the farm: a two-story frame house constructed around 1890 and a two-story stone house probably built in the late 18th or early 19th century. The farm, owned by members of the Lakin family since 1885, operated as a dairy from 1900 until 1963. Most of the buildings and structures on the property date to the late 19th or early 20th century or to 1948. Today, James Franklin (Jimmy) Lakin owns the property with his aunt, Patsy [Lakin] Keller and grows hay, corn, beans, and other crops there.



Figure 30. Aerial view of the Thrasher Farm, showing farm complex in the foreground, looking east (Michael J. Emmons, Jr., 2021).

Friendship Farm (F-6-154)

8302 Stevens Rd.

Thurmont, Frederick County, MD

Late-18th century-present

Access: Private

National Register Eligible: No

An active dairy farm until 2020, Friendship-Anderson Farm is located north of Stevens Road in Thurmont, Frederick County, Maryland. The property is accessed by a gravel farm driveway off of Stevens Road. The farm driveway runs north and uphill to the farm complex. The bank barn is on the west side of the farm driveway, and the milking parlor is on the east. North of the bank barn, a gravel driveway splits off to the west, where the farm lane formerly ran in front of the primary dwelling. The wagon shed with granary and corn crib is on the north side of the driveway, and a dwelling, house 2, is on the south. The primary dwelling stands to the west of these buildings. The main farm driveway continues north past the bank barn and dairy, with the shops standing on the west side of the farm driveway to the north of the bank barn and the cow shed and freestall barn 1 to the north of the milking parlor. North of freestall barn 1, a branch of the farm driveway splits off to the east. Heifer barn 1 and freestall barn 2 are located on the south side of this part of the farm driveway and to the east of freestall barn 1, while the machine shop stands to the north of the driveway. The driveway forms a T, the north branch taking another ninety-degree bend east to storage barn 1, storage barn 2, and heifer barn 2, and the south branch accessing the two bunker silos and the manure storage pit to the southeast of the dairy complex. Continuing north from freestall barn 1, the farm driveway bends slightly to the northwest before continuing north across the property. The run-in shed stands on the west side of the farm driveway across from house 2 on the east side of the farm driveway. House 2 stands behind a row of cedar trees to the north of the machine shed and west of storage barn 1. Friendship-Anderson Farm is just over 160 acres and was an active dairy farm until 2020, leased by tenants with 120 Holstein cows. Today, the farm complex contains 18 buildings, 10 structures, and two farm ponds.



Figure 31. Aerial view of Friendship Farm, looking northwest (Michael J. Emmons, Jr., 2021).

Sager-Burrier-Riggs Farm (F-8-170)

10002B Clemsonville Road

Union Bridge, Frederick County, MD

Late-18th century-present

Access: Private

National Register Eligible: Yes

The Sager-Burrier-Riggs Farm is a former dairy farm, located on the west side of Clemsonville Road, in the vicinity of Union Bridge, Frederick County, Maryland. The entire eastern border of the property is demarcated by Clemsonville Road, and to the north, west, and south of the property are three other farms. The property is accessed via a paved driveway that intersects Clemsonville Road almost perpendicularly. The driveway bifurcates in front of the farmhouse, with the southern portion leading to the Sager-Burrier-Riggs Farm and the northern portion continuing to the farm complex to the west, providing the only point of entry for the complex. The southern driveway splits again, with the western portion leading to the farmhouse and freestanding garage, while the southwestern portion leads to the agricultural outbuildings. The farmhouse is sited on top of a small hill and is also the northernmost building on the property. The domestic and agricultural outbuildings are all arranged to the south of the dwelling, with the exception of a summer kitchen, which is sited almost directly behind the house to the west. The Sager-Burrier-Riggs Farm, which is 129 acres, is still an active farm, although dairy operations ceased in 2016. Today, the farm complex contains 14 buildings, 11 structures, and one foundation.



Figure 32. Aerial view of the Sager-Burrier-Riggs Farm, looking southwest (Michael J. Emmons, Jr., 2021).

Results of Fieldwork Investigation

In total, twelve (12) new properties were identified and added to the Maryland Inventory of Historic Properties, while four (4) properties were re-surveyed for the first time since the 1960s or 70s, while one (1) property was re-surveyed from the early 2000s. Seven (7) farms were surveyed in Carroll County, five (5) farms were surveyed in Cecil County, and five (5) farms were surveyed in Frederick County.

Across all seventeen dairy farms a total of 370 total resources were surveyed, of which only 24 had been previously listed in the Maryland Inventory of Historic Properties. Of those 370 total resources surveyed for this project, 249 were buildings, 15 were sites, 105 were structures, and 1 was an object. Of the 249 total buildings surveyed, 162 were identified as contributing resources, while 87 were identified as noncontributing. Of the 15 total sites examined, 11 were contributing, while 4 were noncontributing. 55 of the 105 total structures were contributing, while 50 were identified as noncontributing. Lastly, the only object surveyed was found to be contributing.

Below are three tables (one for each surveyed county) summarizing the surveyed properties. The tables contain the MIHP number, the farm complex name, street address, town or vicinity, the number of resources surveyed on the farm, the number of contributing resources surveyed, its National Register eligibility status, and lastly if the farm is still a working dairy farm.

Table 1. Dairy Farms Surveyed in Carroll County

MIHP #	Farm Complex Name	Address	Town / Vicinity	# of Resources Surveyed	# of Contributing Resources	NR Eligible	Active Dairy Farm
CARR-326,327	Margaret's Fancy	3800 Sams Creek Road	New Windsor	17	17	Yes	No
CARR-1739	Coldsprings Farm	3901-B Hawks Hill Road	New Windsor	42	15	No	Yes
CARR-1740	MD-Delight	1436 Sullivan Road	Westminster	28	22	Yes	Yes
CARR-1676	Panora Acres / Sellers Farm	3000 Traceys	Manchester	30	14	Yes	Yes

		Mill Road					
CARR-1741	Panora Acres/ P. Peterman Farm	3010 Traceys Mill Road	Manchester	12	4	No	Yes
CARR-1742	Panora Acres/ Daniel Bixler Farm 2	3005 Traceys Mill Road	Manchester	6	3	No	Yes
CARR-1743	Thomas Farm	6210 Sharrett Road	Keymar	9	9	Yes	No

Table 2. Dairy Farms Surveyed in Cecil County

MIHP #	Farm Complex Name	Address	Town / Vicinity	# of Resources Surveyed	# of Contributing Resources	NR Eligible	Active Dairy Farm
CE-142	Mt. Ararat	155 Mt. Ararat Farm Road	Port Deposit	41	30	Yes	No
CE-198	Heritage Hill Farm	2745 Telegraph Road	North East	17	9	No	No
CE-208	Long Green Farm	490 Crothers Road	Rising Sun	35	17	Yes	Yes
CE-1583	Brantwood Dairy Farm	1195 Augustine Herman Highway	Elkton	2	2	Yes	No
CE-1584	Losten's Dairy Farm	1059 Biddle Street	Chesapeake City	23	23	Yes	No

Table 3. Dairy Farms Surveyed in Frederick County

MIHP #	Farm Complex Name	Address	Town / Vicinity	# of Resources Surveyed	# of Contributing Resources	NR Eligible	Active Dairy Farm
F-2-135	Glen-Toctin Farm	5250 Broad Run Road	Jefferson	22	9	Yes	Yes
F-2-136	Lakin Farm	3719 Lander Road	Jefferson	16	14	Yes	No
F-2-137	Thrasher Farm	4101 Lander Road	Jefferson	15	13	Yes	No
F-6-154	Friendship	8302 Stevens Road	Thurmont	30	12	No	No
F-8-170	Sager-Burrier-Riggs Farm	10002B Clemsonville Road	Union Bridge	25	16	Yes	No

Fieldwork Results: Dairy Farm Architecture

Below is a summary of the extant resources surveyed on the seventeen subject farms, organized around the above-defined periods in the dairy farm architectural context. The discussion of surviving architectural resources is divided first by the three time periods identified in the context, and then by the individual architectural resources discussed for each period.

Phase I: Pre-1910+/-

Bank Barns

From the Phase I time period, very few dairy-associated buildings survive besides bank barns. Fourteen (14) of the surveyed properties retained bank barns. Below is a list of these properties.

Property Name	MIHP #	Type
Coldsprings Farm	CARR-1739	Open-Forebay Standard Barn
MD-Delight	CARR-1740	Standard Pennsylvania Bank Barn
Margaret's Fancy	CARR-326,327	Open-Forebay Standard Barn

Seller's Farm	CARR-1676	Open-Forebay Standard Barn
P. Peterman Farm	CARR-1741	Open-Forebay Standard Barn
Daniel Bixler Farm 2	CARR-1742	Open-Forebay Standard Barn
Thomas Farm	CARR-1743	Open-Forebay Standard Barn
Heritage Hill	CE-198	Closed Forebay Standard Barn
Long Green Farm	CE-208	Standard Pennsylvania Bank Barn
Glen-Toctin Farm	F-2-135	Half-Open Forebay Standard Barn
Thrasher Farm	F-2-137	Closed Forebay Standard Barn
Sager-Burrier-Riggs	F-8-170	Core: Double Log-Pen Sweitzer Barn
Lakin Farm	F-2-136	Standard Pennsylvania Bank Barn
Friendship Farm	F-6-154	Half-Open Forebay Standard Barn

Table 4. Table of the bank barn surveyed as part of this project, including farm name, MIHP number, and type of bank barn.

Springhouses / Dairies

Only two of the surveyed properties retained springhouses. This included an eighteenth-century springhouse on Coldsprings Farm (CARR-1739), and an early twentieth-century springhouse at Mt. Ararat (CE-142).

Early Silos

No early silos were located as part of this project.

Phase II: 1910 to 1945+/-

Converted Bank Barns

Of the fourteen farms that retained a bank barn from Phase I, eight (8) of these barns had the lower level of the barn converted for milking. The other six (6) surveyed properties retained bank barns but were either not converted to dairy barns in the twentieth century, or no material fabric survives in the lower level to understand this conversion. Below is a list of the surveyed properties with bank barns—this list also notes if the barn has been altered for dairy farming.

Property Name	MIHP #	Converted to Dairying
Coldsprings Farm	CARR-1739	No surviving evidence

MD-Delight	CARR-1740	No surviving evidence
Margaret's Fancy	CARR-326,327	Yes
Seller's Farm	CARR-1676	Yes
P. Peterman Farm	CARR-1741	No
Daniel Bixler Farm 2	CARR-1742	No
Thomas Farm	CARR-1743	Yes
Heritage Hill	CE-198	Yes
Long Green Farm	CE-208	Yes
Glen-Toctin Farm	F-2-135	Yes
Thrasher Farm	F-2-137	Yes
Sager-Burrier-Riggs	F-8-170	Yes
Lakin Farm	F-2-136	No
Friendship Farm	F-6-154	No surviving evidence

Table 5. Table of the surveyed bank barns that were converted for dairying purposes, including farm name, and MIHP number.

Purpose Built Dairy Barns

Seven (7) of the surveyed farm properties feature purpose-built dairy barns. One of these farms has two such buildings. Below is a list of the surveyed properties with this type of resource.

Property Name	MIHP #	Roof Type
Coldsprings Farm	CARR-1739	Gambrel
Brantwood Dairy Farm	CE-1583	Gambrel
Losten's Dairy Farm	CE-1584	Gable
Glen-Toctin Farm	F-2-135	Gambrel
Lakin Farm	F-2-136	Gambrel
Thrasher	F-2-137	Half Round
Mt. Ararat Large Barn	CE-142	Gable
Mt. Ararat Small Barn	CE-142	Gable

Table 6. Table of the purpose-built dairy barns surveyed, including farm name, MIHP number, and barn roof type.

Milk Houses

Fourteen (14) of the surveyed dairy farms retained milk houses that were constructed during the second time period. Below is a list of the surveyed properties with this type of resource.

Property Name	MIHP #	Construction Materials	Relationship to Barn
Margaret's Fancy	CARR-326,327	Concrete block	Connected / exterior access only
Coldsprings Farm	CARR-1739	Concrete block	Freestanding
MD-Delight	CARR-1740	Concrete block	Freestanding

Seller's Farm	CARR-1676	Concrete block	Connected / interior access
Thomas Farm	CARR-1743	Panel-faced concrete block	Connected / interior access
Mt. Ararat	CE-142	Concrete block	Freestanding
Heritage Hill	CE-198	Concrete block	Connected via passageway
Long Green Farm	CE-208	Concrete block	Connected / exterior access only
Brantwood Dairy	CE-1583	Concrete block	Freestanding
Losten's Dairy Farm	CE-1584	Concrete block	Freestanding
Glen-Toctin Farm	F-2-135	Concrete block	Connected via passageway
Lakin Farm	F-2-136	Panel-faced concrete block	Freestanding
Thrasher Farm	F-2-137	Concrete block	Freestanding
Sager-Burrier-Riggs Farm	F-8-170	Frame	Freestanding

Table 7. Table of surveyed farms with milk houses, containing farm name, MIHP number, construction material, and relationship of the milk house to the barn.

Bull Pens

Few bull pens were located during the survey. Two (2) farms, the Lakin Farm (F-2-136), and Mt. Ararat (CE-142), had purpose-built, free-standing masonry bull pens. Two additional bull pens were surveyed that were both masonry buildings attached to barns. One was at Margaret's Fancy; the other was at Brantwood Dairy farm (CE-1583). Three bull pens were surveyed at Long Green Farm (CE-208), however all were constructed during the third time period.

Bottling Facilities

Few bottling facilities were located during the survey. This is likely due to the fact very few dairy farms had their own bottling facilities. The largest and best surviving example was found at the Losten's Dairy Farm (CE-1584) built in 1941. A second bottling facility, a smaller building constructed in the 1930s, was located at Margaret's Fancy (CARR-326). Lastly, the foundation of a bottling facility survives at Mt. Ararat (CE-142). Mt. Ararat was the largest, and longest-running farm that distributed its own milk. Most of the other subject properties sold directly to milk cooperatives or other large distributors.

Round Tower Silos

Several round tower silos were located during this survey. They were constructed in a variety of materials, including stone, hollow tile, and concrete, however, the dominant material is concrete. Below is a list of the subject property name, with the number and construction material of the round tower silos surveyed on the property.

Property Name	MIHP #	Number and Construction Material of Tower Silos
MD-Delight	CARR-1740	1 concrete stave
Coldsprings	CARR-1739	4 concrete stave
Margaret's Fancy	CARR-326,327	2 concrete stave
Thomas Farm	CARR-1743	1 concrete stave
Brantwood Dairy Farm	CE-1583	2 concrete stave
Long Green Farm	CE-208	1 concrete stave
Heritage Hill	CE-198	1 concrete stave
Losten's Dairy Farm	CE-1584	2 concrete stave
Mt. Ararat	CE-142	4 stone
Glen-Toctin Farm	F-2-135	1 concrete stave
Thrasher Farm	F-2-137	1 hollow tile (1 concrete stave demolished)
Lakin Farm	F-2-136	1 hollow tile, 1 concrete stave

Table 8. Table of farms with Period II round tower silos.

Phase III: 1945+/- to 1985

Harvestores

Few of the surveyed farms built Harvestore silos. This is likely partially attributed to the fact that several property owners continued to erect concrete stave silos in this period. The properties that contained Harvestore silos are MD-Delight (CARR-1740) which has five of these structures, Long Green Farm (CE-208) which has one, Mt. Ararat (CE-142) which has one, and lastly the Sager-Riggs-Burrier Farm (F-8-170) which has two.

Bunker Silos

Only active dairy farms, or ones that recently stopped milking had examples of bunker silos in the survey area. There are six at Coldsprings Farm (CARR-1739), four at the P. Peterman Farm (CARR-1741), three at Long Green Farm (CE-208), four at Glen-Toctin Farm (F-2-135), and two at Friendship Farm (F-6-154).

Round Tower Silos

Round tower silos were still constructed in the third time period as well. Examples of these late round tower silos are all concrete constructions, and are generally much taller than the period II round tower silos. Below is a summary of the number of round tower silos constructed on surveyed farm properties during the third time period.

Property Name	MIHP #	Number and Construction Material of Tower Silos
Coldsprings	CARR-1739	2 concrete stave
P. Peterman	CARR-1741	1 concrete stave
Seller's Farm	CARR-1676	3 concrete stave
Long Green Farm	CE-208	1 concrete stave
Mt. Ararat	CE-142	4 concrete stave
Glen-Toctin Farm	F-2-135	1 concrete stave
Lakin Farm	F-2-136	1 concrete stave
Sager-Burrier-Riggs Farm	F-8-170	2 concrete stave

Table 9. Table of surveyed farms with Period III round tower silos.

Freestall Barns/Pen Barns/Loafing Barns/Calf Barns

Several examples of animal stabling barns were found on the subject properties. Below is a summary of the types of animal stabling buildings, as well as the number found on each farm.

Property Name	MIHP #	Number and Type
MD-Delight	CARR-1740	3; 2 freestall barns, 1 calf barn
Coldsprings Farm	CARR-1739	5; 2 bedded pack barns, 1 box stall barn, 2 freestall barns
Seller's Farm	CARR-1676	5; 1 freestall barn, 1 dry cow barn, 2 steer barns, 1 calf barn
P. Peterman Farm	CARR-1741	1; heifer barn
Thomas Farm	CARR-1743	1; freestall barn
Long Green Farm	CE-208	7; 5 freestall barns, 2 calf barns
Heritage Hill	CE-198	1; heifer barn
Losten's Dairy Farm	CE-1584	1; calf barn
Mt. Ararat	CE-142	7; 1 show barn, 4 heifer barn, 1 animal barn, 1 calf barn
Glen-Toctin Farm	F-2-135	5; 2 freestall barns, individual cow barn, special needs barn, calf barn
Lakin Farm	F-2-136	1; freestall barn

Friendship Farm	F-6-154	4; 2 freestall barns, 2 heifer barns
Sager-Burrier-Riggs	F-8-170	1; freestall barn

Table 10. Table of surveyed farms with Period III animal housing buildings. The table includes the name of the farm, MIHP number, the number of animal stables, and the type.

Milking Parlors

Several milking parlors, in a variety of layouts, were located on the subject properties. One property (Coldsprings Farms had two parlors). Below is a summary of the properties with milking parlors, as well as the type of interior parlor configuration. (Note: the “double #” refers to the number of cows milked at a time, while the “parallel, herringbone, tandem, rotary” refers to how the cows are oriented to the operator pit).

Property Name	MIHP #	Milking Parlor Type
Coldsprings Farm Parlor 1	CARR-1739	Double 8 Parallel
Coldsprings Farm Parlor 2	CARR-1739	Double 20 Parallel
MD-Delight	CARR-1740	Double 8 Herringbone
Seller’s Farm	CARR-1676	Double 10 Parallel
Mt. Ararat	CE-142	Double 6 Herringbone
Long Green Farm	CE-208	Double 8 Herringbone
Glen-Toctin Farm	F-2-135	Double 8 Herringbone
Friendship Farm	F-6-154	Double 4 Herringbone
Sager-Burrier-Riggs Farm	F-8-170	Double 6 Herringbone

Table 11. Table of surveyed milking parlors, containing the property name, MIHP number, and type of milking parlor plan.

Bulk Tanks

Bulk tanks were surveyed at twelve (12) of the subject properties. Bulk tanks were either located in the older milk houses, or if a farm had upgraded operations in the post-War period, they were found in the milking parlors. Of the twelve located four (4) bulk tanks had been removed, but physical evidence in the milk houses or parlors survived. Below is a summary of the historic farms that had or have bulk milk tanks.

Property Name	MIHP #	Extant
MD-Delight	CARR-1740	Yes
Coldsprings Farm	CARR-1739	Yes
Seller’s Farm	CARR-1676	Yes
Thomas Farm	CARR-1743	Yes
Brantwood Dairy Farm	CE-1583	Yes
Long Green Farm	CE-208	Yes
Losten’s Dairy Farm	CE-1584	No (2 removed)
Heritage Hill	CE-198	No
Mt. Ararat	CE-142	No

Glen-Toctin Farm	F-2-135	Yes
Friendship Farm	F-6-154	No (removed 2021)
Lakin Farm	F-2-136	Yes
Sager-Burrier-Riggs Farm	F-8-170	Yes

Table 12. Table of surveyed properties with bulk milk tanks. The table also contains information about farms that have removed these resources.

Manure Tanks/Pits/Bunkers/Slurry Stores

A variety of waste management systems were encountered on the subject properties. Below is a summary of farms with these extant systems, what type, and the number constructed.

Property Name	MIHP #	Waste Management Type
MD-Delight	CARR-1740	1 pit, 3 bunkers
Coldsprings Farm	CARR-1739	5 pits, 1 Slurrystore, 2 lagoons
Seller's Farm	CARR-1676	2 pits
Long Green Farm	CE-208	1 pit
Mt. Ararat	CE-142	3 pits
Glen-Toctin Farm	F-2-135	1 pit
Friendship Farm	F-6-154	1 pit
Sager-Burrier-Riggs Farm	F-8-170	1 Slurrystore

Table 13. Table of surveyed properties with a Period III manure management system. Contained in the table is the type and number of waste management structures found.

Ponds

Few of the surveyed properties had farm ponds. MD-Delight (CARR-1740), the P. Peterman Farm, (CARR-1741), the Thomas Farm (CARR-1743) and the Glen-Toctin Farm (F-2-135) all had a farm pond added to the landscape during the 1960s. Lastly, two farm ponds were installed at Friendship Farm (F-6-154).

Offices

A handful of the historic farms had offices—some had freestanding offices, others had office spaces incorporated into other buildings. Coldsprings Farm (CARR-1739) has an office attached to a farm machine shop. The Seller's Farm (CARR-1676) has a small freestanding office. Losten's Dairy Farm (CE-1584) has a large freestanding office. Both Mt. Ararat (CE-142) and Glen-Toctin Farm (F-2-135) have offices located in the milking parlor. Lastly, the Thrasher Farm (F-2-137) has an office space attached to the dairy barn.

Summary & Recommendations

Summary

For Phase I of this project, seventeen historic dairy farms were surveyed in three counties, including Carroll, Cecil, and Frederick counties. Twelve new properties were identified and added to the Maryland Inventory of Historic Properties, while four properties were re-surveyed. Across all seventeen dairy farms, a total of 370 total resources were surveyed, of which only 24 had been previously listed in the Maryland Inventory of Historic Properties. Twelve of the surveyed farms are recommended eligible for the National Register of Historic Places under the historical and architectural contexts established in this report, retaining enough integrity of their dairy-related infrastructure to be listed for one or more historical phases of dairying. These farms include Margaret's Fancy (CARR-326), MD-Delight (CARR-1740), Panora Acres (Sellers Farm CARR-1676), the Thomas Farm (CARR-1743), Mt. Ararat (CE-142), Long Green Farm (CE-208), Brantwood Dairy Farm (CE-1583), Losten's Dairy Farm (CE-1584), Glen-Toctin Farm (F-2-135), Lakin Farm (F-2-136), Thrasher Farm (F-2-137), and the Sager-Burrier-Riggs Farm (F-8-170).

Evaluation of Survey Methods

One of the most advantageous approaches for identifying historic dairy farm complexes for documentation during this study was soliciting the assistance of local agricultural extension offices and farm bureaus, which were invaluable for providing introductions to farm property owners. While informal windshield scouting, door-knocking, and/or cold-calling led to successful documentation of a few of the properties during this phase, having introductions from ag extension agents or trusted agricultural organizations facilitated the majority of the surveys and documentation. Even mentioning that a farm had been recommended by such an agricultural official instilled a certain level of trust and cooperation that might not have been present from a strict cold-call approach. That being said, very few property owners were hostile or uncooperative. Most dairy farm owners seemed to appreciate the attention provided to a challenged and disappearing industry.

During this initial phase of our study, we intentionally selected a broad range of farm sizes and types, in the hopes of documenting and better understanding the diversity of architectural expression represented by different eras of dairy farming. This approach was successful, as the seventeen selected properties represented a nice mix of farm complexes with widely varying levels of survival. Many contained several layers of dairy farm history, with similar amounts of resources surviving from Phase I, Phase II, and Phase III of the historical dairy context. Some properties contained farm complexes that mostly represented a single phase of dairy farming. Other properties, especially those that continue as active dairy farms, exhibit many recent updates from the decades

not covered in the above context, revealing how dairy farmers have adapted and altered older complexes to maintain their operation. Now that examples of a wide array of dairy farm complexes have been documented, future documentation efforts might best focus on earlier dairy complexes, especially Phase II, that retain intact purpose-built dairy farms, early silos, and milk houses.

Due especially to the COVID-19 epidemic, our ability to visit local research repositories was very limited, which may have hampered efforts to quickly identify and better understand important local dairy farms.

Recommendations

Heavy architectural loss and alteration has occurred at dairy complexes from the first half of the twentieth century (Phase II), as economic pressures and industry changes in the second half of the twentieth century (Phase III) have prompted widespread infrastructure renewal and many farms have ceased dairy operations. As such, dairy complexes that retain original stable barns, hollow tile or early concrete silos, milk houses, or other early features should be prioritized for documentation, National Register nomination, and preservation. Phase III architecture, though it represents a distinct phase of dairy history that is now over a half-century old, is underrecognized and understudied due to the moving “50-year rule” and because much of that historic infrastructure appears more modern and industrially produced. While Phase II is a documentation priority, attention should also be given to Phase III complexes that were historically important and/or retain high architectural integrity to that period.

Additional architectural survey should be conducted in all three counties studied for this report (Carroll, Cecil and Frederick). Frederick and Carroll Counties should be prioritized, since they were historically two of the largest dairy-producing counties in the state during the Phase II time period and may face even more threats due to their proximity to large urban areas.

Several excellent examples of Phase II dairy complexes that were studied as part of this survey should be nominated to the National Register of Historic Places. The suggested priorities are Margaret’s Fancy (CARR-326), Losten’s Dairy Farm (CE-1584), Mt. Ararat (CE-142), and the Thrasher Farm (F-2-137).

Lastly, we recommend oral history projects to record the memories of dairy farmers and their families. Many of Maryland’s dairy farmers are now of advanced age and retired, and in some cases possess decades of memories about the day-to-day operations of their dairy farms, as well as the challenges and changes of dairy farming.

Preserving those experiences, including the lived routines of farmers as they moved cows, feed, and milk through their dairy complexes, would shed important light on the interactions of people, architecture, animals, machinery, and other inputs and outputs on Maryland's dairy farms. Each dairy farm complex is a stage set for Maryland's agricultural history, and only the recollections of how they functioned can fill-in the important blanks in our historical understanding.

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Appendix A: Index of Surveyed Properties

Documenting Disappearing Dairy Farms Phase I Surveyed Properties					
MIHP #	Farm Complex Name	Historic / Other Name	Address	Town / Vicinity	County
CARR-326,327	Margaret's Fancy		3800 Sams Creek Road	New Windsor	Carroll
CARR-1739	Coldsprings Farm	Samuel M. Hoff Farm	3901-B Hawks Hill Road	New Windsor	Carroll
CARR-1740	MD-Delight	Iron Intention	1436 Sullivan Road	Westminster	Carroll
CARR-1676	Panora Acres	Seller's Farm	3000 Traceys Mill Road	Manchester	Carroll
CARR-1741	Panora Acres	P. Peterman Farm	3010 Traceys Mill Road	Manchester	Carroll
CARR-1742	Panora Acres	Daniel Bixler Farm 2	3005 Traceys Mill Road	Manchester	Carroll
CARR-1743	Thomas Farm	Sharrett Farm	6210 Sharrett Road	Keymar	Carroll
CE-142	Mt. Ararat		155 Mt. Ararat Farm Road	Port Deposit	Cecil
CE-198	Heritage Hill Farm	Moore Farm	2745 Telegraph Road	North East	Cecil
CE-208	Long Green Farm	Crothers Farm	490 Crothers Road	Rising Sun	Cecil
CE-1583	Brantwood Dairy Farm	Church Farm	1195 Augustine Herman Highway	Elkton	Cecil
CE-1584	Losten's Dairy Farm	Three Bohemia Sisters Farm	1059 Biddle Street	Chesapeake City	Cecil
F-2-135	Glen-Toctin Farm	Allen Farm	5250 Broad Run Road	Jefferson	Frederick
F-2-136	Lakin Farm	Kessler Farm	3719 Lander Road	Jefferson	Frederick
F-2-137	Thrasher Farm	Thrasher-Lakin Farm	4101 Lander Road	Jefferson	Frederick
F-6-154	Friendship	Anderson Farm	8302 Stevens Road	Thurmont	Frederick
F-8-170	Sager-Burrier-Riggs Farm	Strawberry Plains	10002B Clemsonville Road	Union Bridge	Frederick

Appendix B: Dairy Farming in Carroll County

Carroll County is located in the Piedmont Plateau region of northern Maryland. To the north, the county is bounded by the Mason-Dixon line, and York and Adams Counties in Pennsylvania. To the west, Carroll County borders Frederick County, Maryland; to the south, it borders Howard County, Maryland. To the east, the northern half of Carroll County borders Baltimore County, Maryland while the southern half of the eastern border is formed by the North Branch of the Patapsco River, and the Liberty Reservoir.

Carroll County was created in 1837 from parts of Baltimore and Frederick Counties. Early seventeenth-century settlers were Scots-Irish, Germans immigrants, German descendants moving south from Pennsylvania, as well as British descendants relocating from the tidewater region of Maryland.⁹⁸ Also present among early settlers were African Americans who were brought by European settlers (and their descendants) as slaves.⁹⁹ Early settlers established a diversified agricultural economy in this region, growing a mixture of crops including grain, livestock, and timber, along with tobacco.¹⁰⁰ This region of Mid-Maryland prospered agriculturally and became a bread basket during the mid-1700s due to its very fertile soils.¹⁰¹ One historian has noted that the period between the French and Indian War through the first quarter of the nineteenth century “marked the zenith of mid-Maryland’s agricultural [grain] prosperity.”¹⁰²

From the beginning of the nineteenth century, Carroll County farmers were connected to urban markets, especially Baltimore, through turnpikes and later railroads. In 1805, the Baltimore and Reisterstown Turnpike Company was chartered, and by 1807 the turnpike road was laid in Carroll County.¹⁰³ This turnpike ultimately linked Pittsburgh to Baltimore, and allowed Carroll County farmers the ability to sell their goods to two large urban markets. Construction of the Westminster and Hagerstown turnpike began in 1824; however, the construction and utility of this turnpike was soon eclipsed by the coming of railroads to Carroll County.¹⁰⁴ The Baltimore & Ohio Railroad entered Carroll County on its southern border and ran through Skyesville and

⁹⁸ Paula S. Reed, Dean Herrin, and Barbara Powell, *Tillers of the Soil: A History of Agriculture in Mid-Maryland* (Frederick, MD: Catocin Center for Regional Studies Frederick Community College, 2011), 1.

⁹⁹ Reed, Herrin, and Powell, 1.

¹⁰⁰ Reed, Herrin, and Powell, 5.

¹⁰¹ Reed, Herrin, and Powell, 5; J. Thomas Scharf, *History of Western Maryland; Frederick, Montgomery, Carroll, Washington, Allegany, and Garrett Counties from the Earliest Period to the Present Day; Including Biographical Sketches of Their Representative Men*, Vol. 2 (Philadelphia, PA: Louis H. Everts, 1882), 801.

¹⁰² Reed, Herrin, and Powell, 21.

¹⁰³ Scharf, Vol. 2, 806.

¹⁰⁴ Scharf, Vol. 2, 806.

Winfield by the 1830s.¹⁰⁵ In 1852, the Western Maryland Railway (first formed as the Baltimore, Carroll and Frederick Railroad) was chartered by the Maryland Assembly to facilitate the sale of “farm-grown foods and locally produced goods” in Baltimore.¹⁰⁶ The B&O Railroad first reached Westminster in 1861, and ran to Union Bridge by 1861. This physical proximity to Baltimore, and connectivity via multiple railways and turnpikes, allowed Carroll County farmers by the third quarter of the nineteenth century to “build up a trade in the products of dairy unsurpassed probably elsewhere in Maryland.”¹⁰⁷

By the mid-nineteenth century, Carroll County farmers began to diversify farm operations. While farmers were still predominately producing grains like wheat and corn in 1850, they also were producing a “surprising” amount of butter—totaling 444,759 pounds.¹⁰⁸ This trend of Carroll County farmers augmenting crop sales with the sale of butter as a secondary agricultural product continued in 1860, with farmers producing 503,509 pounds of butter.¹⁰⁹ Throughout the rest of the nineteenth century, farmers continued to increase their butter production—and by 1889, they had sold 823,759 pounds of butter in a single year, while continuing to grow grains as their primary agricultural output.¹¹⁰

By 1870, the first year fluid milk was recorded in the agricultural census, Carroll County farmers were selling a small amount of fluid milk in addition to butter.¹¹¹ That year 179,451 gallons of fluid milk were sold.¹¹² Just ten years later, however, in 1880, the amount of fluid milk sold in Carroll County increased by a factor of five—with farmers selling 952,516 gallons.¹¹³ This exponential growth in the production of fluid milk production continued in 1890, with Carroll County farmers increasing their production again by five times in just ten years—now totaling 5,444,173 gallons.¹¹⁴

¹⁰⁵ Jacob Denobel, “A Fast Track to Carroll’s Growth: Railroad, County History are Intertwined,” *Carroll County Times*, October 12, 2016.

¹⁰⁶ Denobel.

¹⁰⁷ Scharf, Vol. 2, 802.

¹⁰⁸ Reed, Herrin, and Powell, 40.

¹⁰⁹ Reed, Herrin, and Powell, 41.

¹¹⁰ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1890. Web archive. https://agcensus.library.cornell.edu/census_year/1890-census/.

¹¹¹ Census enumeration category is “milk sold, or sent to butter and cheese factories.”

¹¹² United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1870. Web archive. https://agcensus.library.cornell.edu/census_year/1870-census/.

¹¹³ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1880. Web archive. https://agcensus.library.cornell.edu/census_year/1880-census/.

¹¹⁴ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1890. Web archive. https://agcensus.library.cornell.edu/census_year/1890-census/.

By the turn of the twentieth century, dairying was a key part of Carroll County's agricultural development.¹¹⁵ In 1900, farmers were producing about 10% of the fluid milk (7,690,576 gallons) in the State of Maryland on 3,007 farms.¹¹⁶ That same year, the amount of butter made in Carroll County had also increased to 1,258,700 pounds. On the other hand, only 20 pounds of cheese was made that year, reflecting the new emphasis on fluid milk and butter. In the early twentieth century, Carroll County farmers transitioned away from extensive field crops to producing perishable goods (mostly dairy products) as their agricultural output. By 1910, the value of milk surpassed the sales of wheat for the first time in the county.¹¹⁷ That year, Carroll County was third largest dairy producing county in the state, following only Frederick and Baltimore counties.

The production of fluid milk in Carroll County continued to grow steadily over the remainder of the Phase II time period (1880-1945 +/-). This steady increase mirrored the growth of the dairy industry statewide during that same period (see figure 33). At the beginning of that time period, in 1880, Carroll County produced 952,516 gallons of milk, and by 1945, that number had grown by ten times, with Carroll dairy farmers producing 10,642,913 gallons of milk.¹¹⁸

¹¹⁵ Carol Lee, *Legacy of the Land: 250 Years of Agriculture in Carroll County, Maryland* (Westminster, MD: Carroll County Commissioners, 1982), 87.

¹¹⁶ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1900. Web archive. https://agcensus.library.cornell.edu/census_year/1900-census/.

¹¹⁷ Lee, 81.

¹¹⁸ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1945. Web archive. https://agcensus.library.cornell.edu/census_parts/1945-maryland-and-district-of-columbia/.

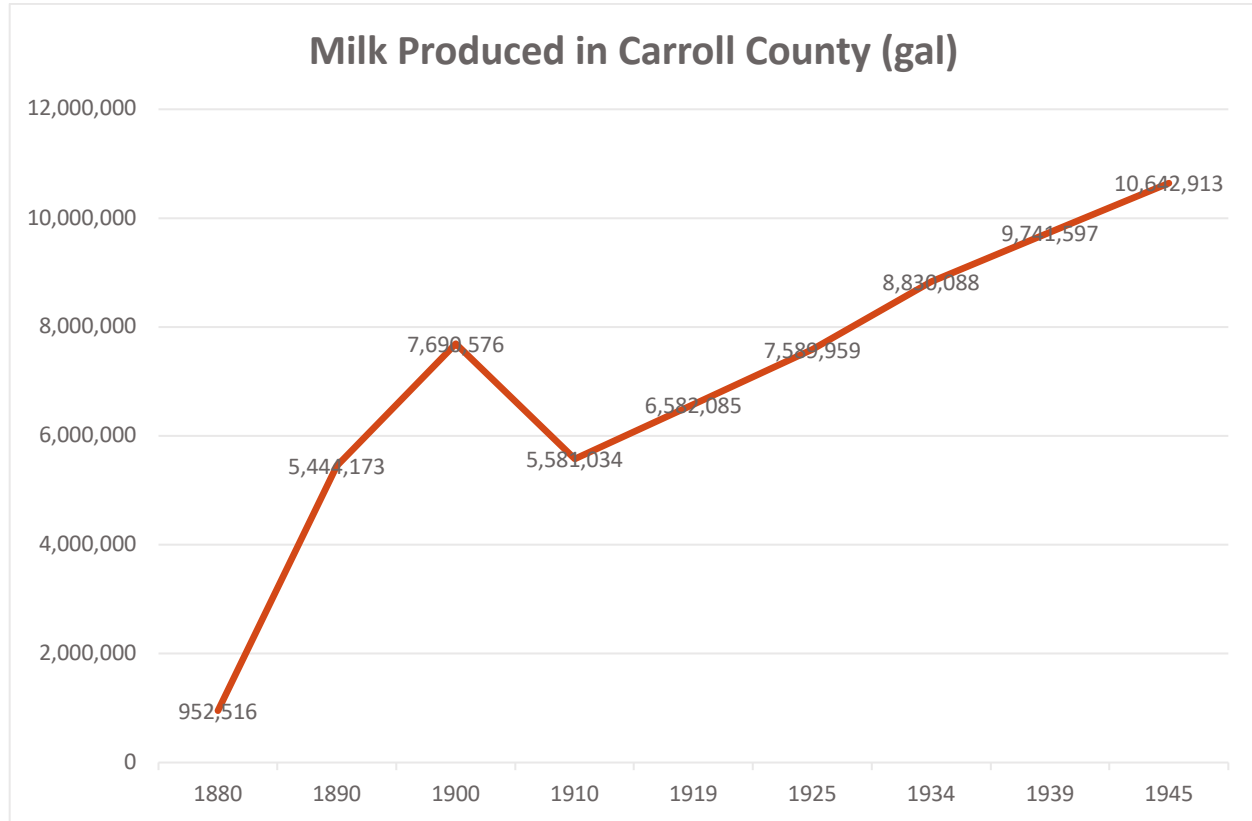


Figure 33. Amount of milk produced in Carroll County in gallons during the Period II (1880-1945) time period.

While fluid milk production continued to increase, farmers gradually stopped producing butter during the first half of the twentieth century. In 1880, Carroll County farmers produced 840,038 pounds of butter, rising to a county high in production in 1910, when farmers produced 1,273,056 pounds of butter.¹¹⁹ By 1939 (the last year the production of butter is individually recorded), the amount of butter produced had decreased to 162,679 pounds annually.¹²⁰ This mirrored statewide and national trends in the production of dairy products. Additionally, over the course of these five decades, the agricultural census changed how butter was recorded—removing the category “butter made on farms (in pounds)” in 1945. In 1950, the sale of butter, buttermilk, skim milk, and cheese (in dollars) were all combined from individual categories into just one. These changes to the agricultural census indicate two things: first, it is likely that by 1950 most of America’s dairy farmers had switched to the production and sale of fluid milk, and secondly, products like cheese and butter now accounted for so little of the total of dairy products produced it no longer made sense to record them individually.

¹¹⁹ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1910. Web archive. https://agcensus.library.cornell.edu/census_year/1910-census/.

¹²⁰ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1940. Web archive. https://agcensus.library.cornell.edu/census_parts/1940-maryland/.

To keep up with the increased demand for fluid milk in the first half of the twentieth century, the number of cows milked in Carroll County continued to steadily grow. Starting in 1910, the number of cows milked on the county's farms was 12,510.¹²¹ The next year this information was recorded (1925), the number of cows milked had risen by almost 4,000 cows to 16,393.¹²² By 1945, the number of cows milked had risen again to 17,354.¹²³ While the number of cows steadily increased over the first half of the twentieth century, so did each individual cow's milk production. On average, each dairy cow in Carroll County produced 446 gallons a milk annually in 1910.¹²⁴ By 1945, each dairy cow now produced 613 gallons a milk a year (see figure 34).¹²⁵ However, peak milk production (gallons per cow) in Carroll County was recorded in 1939 with 626 gallons per cow. Several factors contributed to this increase in production during the first half of the twentieth century, including the sanitation reform movement, the rise of scientific animal breeding and animal selection, better and more nutritious cow feed, and a switch in the livestock breeds themselves. Indeed, during this time period (1880-1945 +/-), many farmers upgraded from the general cow breeds popular in the nineteenth century to high-producing, dairy-specific cow breeds in the early-twentieth century. Some of the most popular cow breeds encountered during this survey were Holsteins, Jerseys, and Guernsey.

¹²¹ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1910. Web archive. https://agcensus.library.cornell.edu/census_year/1910-census/.

¹²² United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1925. Web archive. https://agcensus.library.cornell.edu/census_parts/1925-maryland/

¹²³ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1945. Web archive. https://agcensus.library.cornell.edu/census_parts/1945-maryland-and-district-of-columbia/.

¹²⁴ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1910. Web archive. https://agcensus.library.cornell.edu/census_year/1910-census/.

¹²⁵ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1945. Web archive. https://agcensus.library.cornell.edu/census_parts/1945-maryland-and-district-of-columbia/.

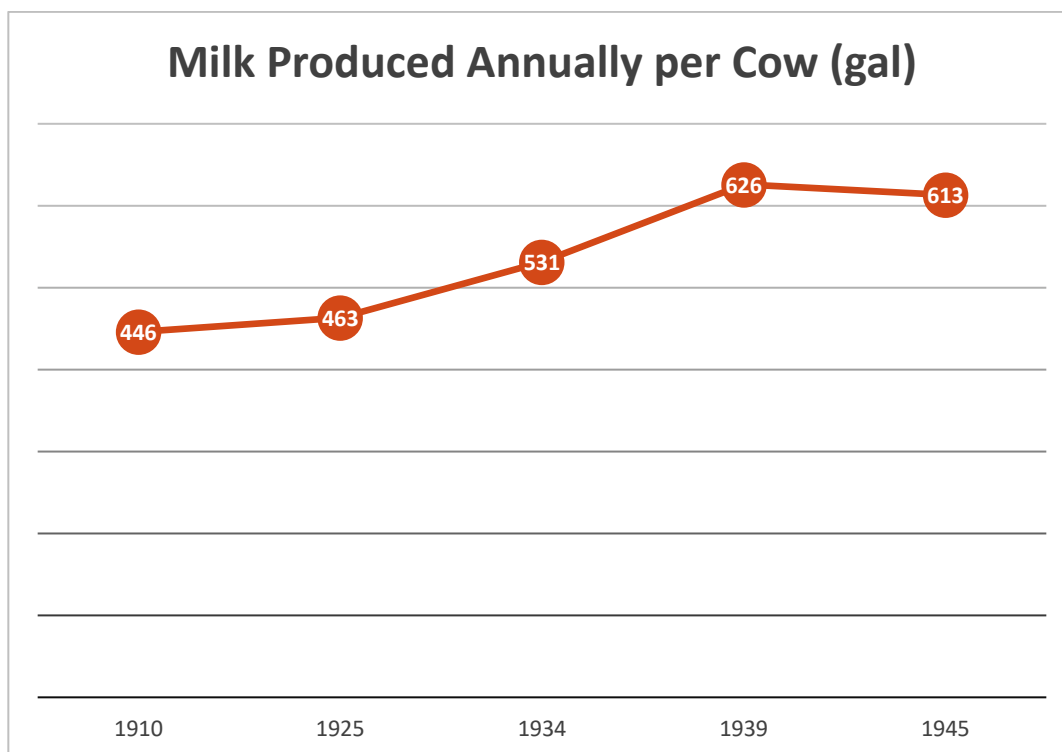


Figure 34. Graph showing the increase in milk produced per cow annually in Carroll County from 1910 to 1945.

The third time period identified in this dairy context (1945-1985 +/-) is marked by both the peak sales of dairy products in Carroll County, as well as a sharp decline in the number of dairy farms—both of these trends mirroring statewide and nationwide trends in the dairy industry. In 1950, there were 18,207 dairy cows on 940 farms. These cows produced 42,921 gallons of milk daily.¹²⁶ By 1954, the number of dairy farms had decreased to 913, but the number of milk cows rose to 20,702, producing 46,397 gallons of milk daily.¹²⁷ In 1964, the last year the Agricultural Census recorded the category of “milk produced” (in either gallons or pounds), Carroll County farmers produced 17,541,183 gallons of milk—the highest volume of milk recorded in any Agricultural Census between 1880 and 1964 (see figure 35).¹²⁸

¹²⁶ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1950. Web archive. https://agcensus.library.cornell.edu/census_parts/1950-delaware-maryland-and-district-of-columbia/.

¹²⁷ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1954. Web archive. https://agcensus.library.cornell.edu/census_parts/1954-maryland/.

¹²⁸ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1964. Web archive. https://agcensus.library.cornell.edu/census_parts/1964-maryland/.

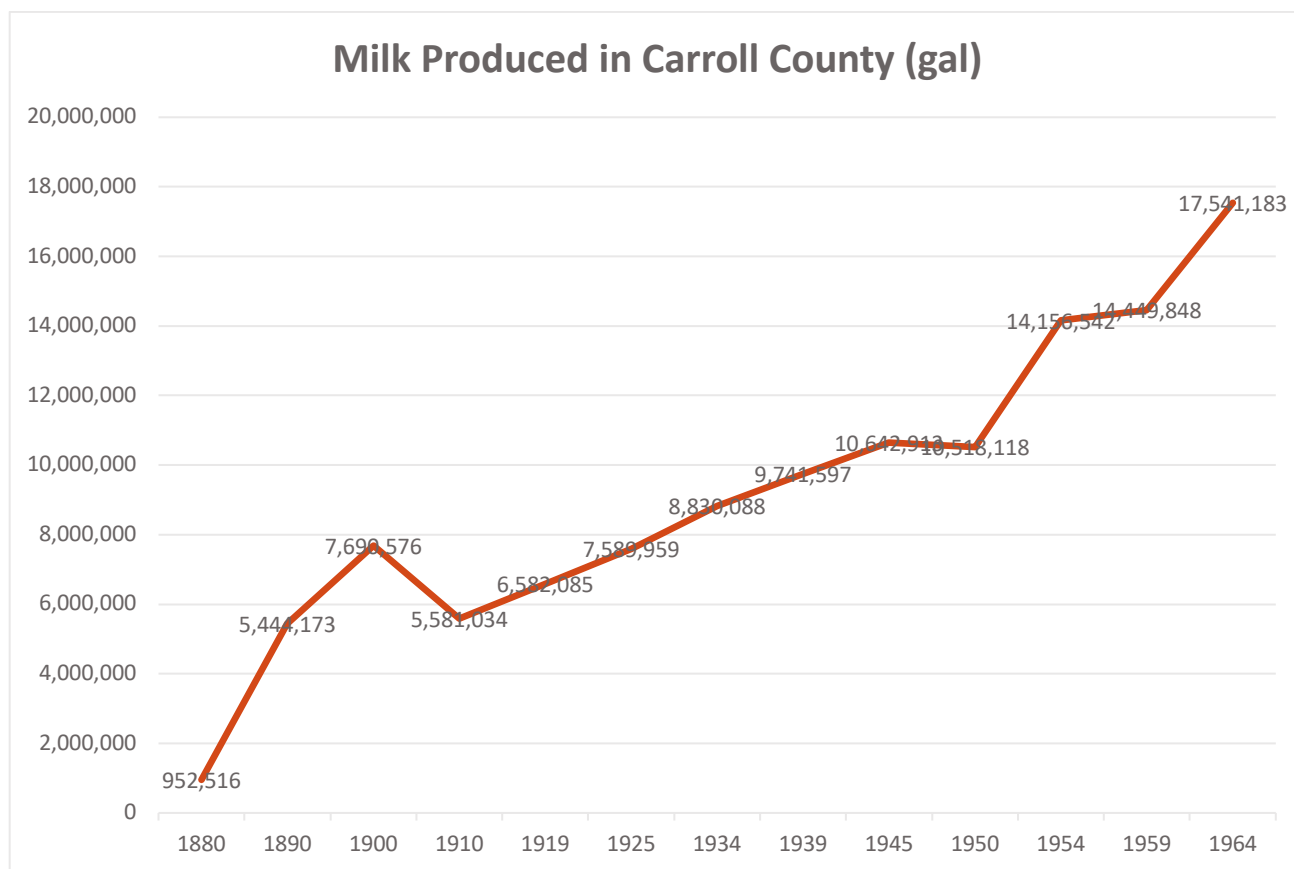


Figure 35. Chart showing the annual milk production (in gallons) in Carroll County from 1880 to 1964.

The next several agricultural censuses (1954-1982) demonstrate the continuing trends of increasing total values for dairy products sold, while the number of dairy farms in the county steadily decreased (see figures 36 and 37). This relationship continued through 1982, just three years before the federal government instituted the Dairy Termination Program. That year (1982) marked the peak of dairy sales in Carroll County, after which sales declined slightly in the following two decades. However, in the early twenty-first century, the value of dairy products sold—at least, as measured in dollars—climbed again. In 2007, the dairy products sold outproduced all previous years—totaling \$22,940,000 in value, beating out the previous high recorded in 1982 by a little over \$600,000 (\$22,313,000).¹²⁹

¹²⁹ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 2007. Web archive. https://agcensus.library.cornell.edu/census_parts/2007-maryland/.

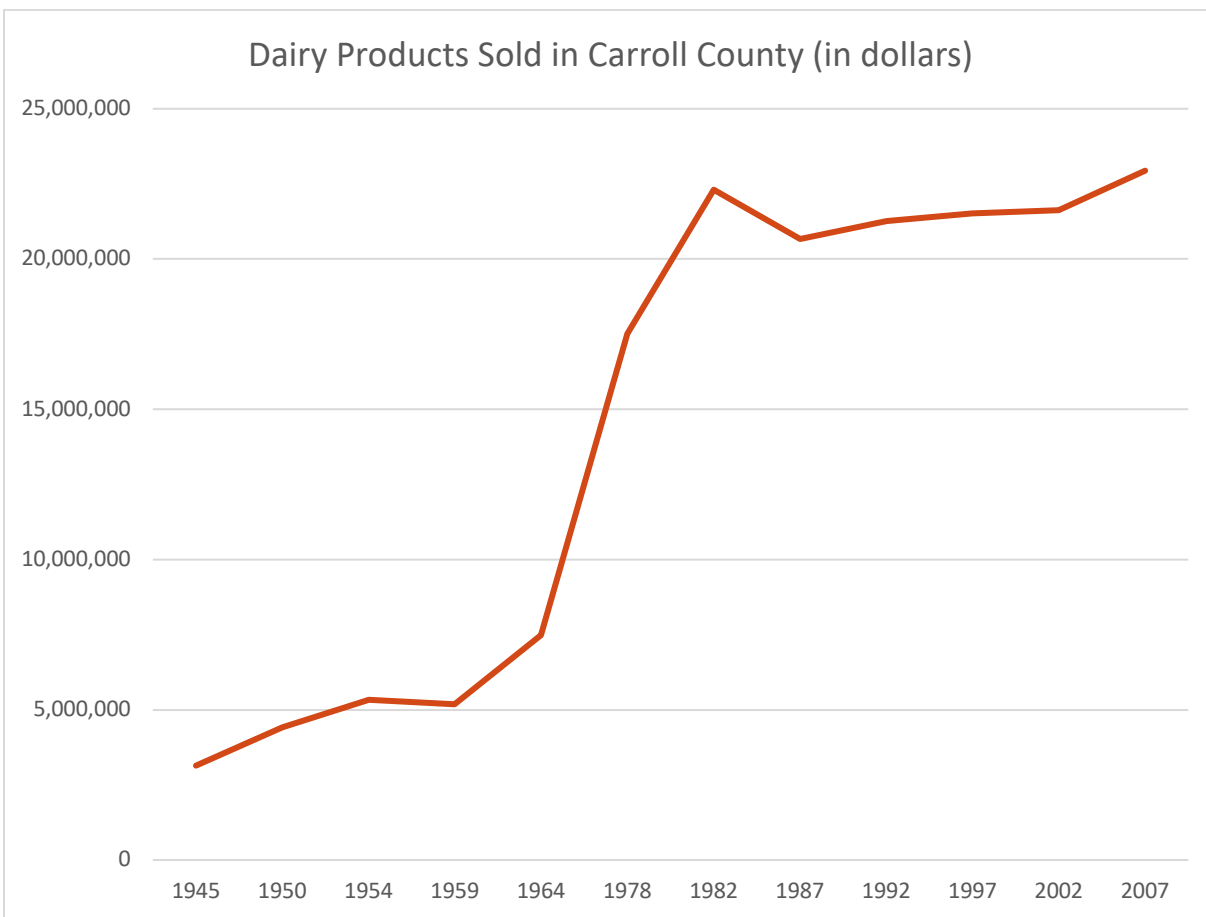


Figure 36. Graph showing the growth (in dollars) of Carroll's dairy industry during from 1945-2007.

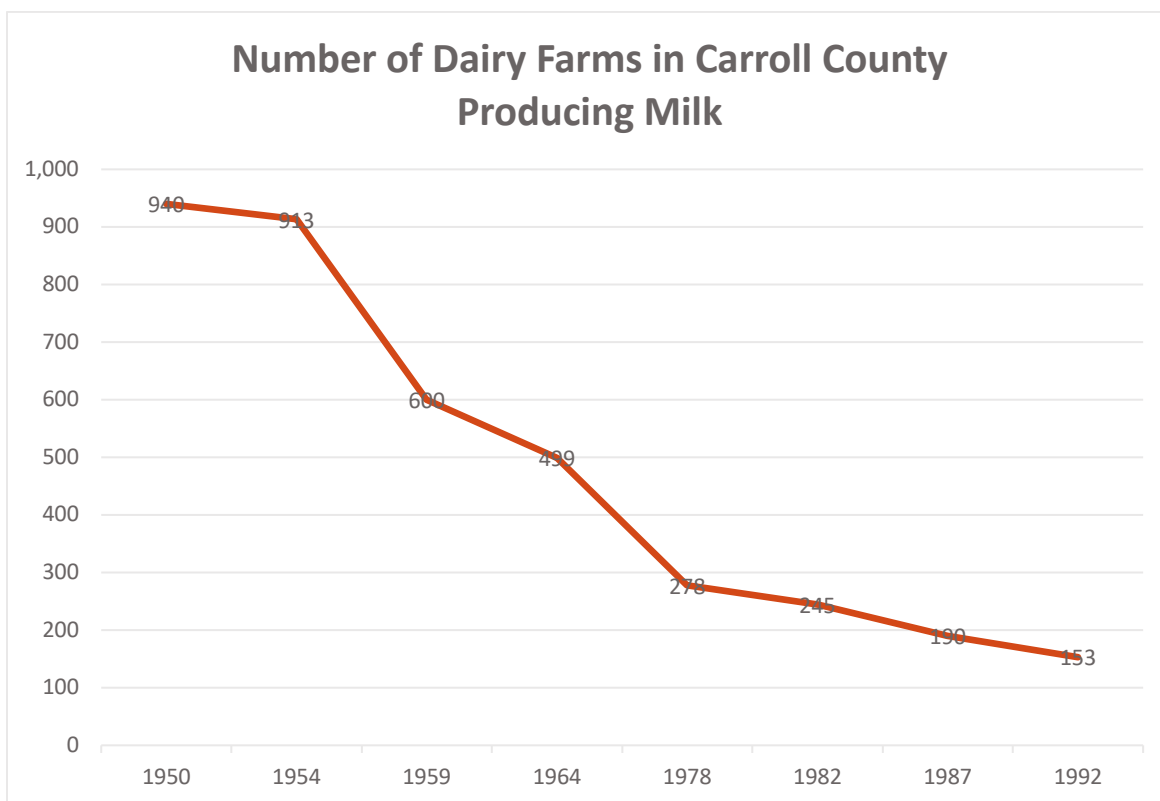


Figure 37. Graph showing the steep decline in the number of dairy farms in Carroll County from 1950-1992.

While the value of dairy products sold (in dollars) continued to rise over the second half of twentieth century, the number of active dairy farms continued to decline over the same period, as well as into the twenty-first century. In 2012, there were 53 active dairy farms, but by 2019, only 24 active dairy farms remained.¹³⁰ The majority of the remaining dairy farms in Carroll County sell fluid milk directly to companies or milk cooperatives. The three active dairy farms in Carroll County that were surveyed as part of this project all sold their fluid milk to the Maryland & Virginia Milk Producers Cooperative Association. The three active dairy farms surveyed were Coldsprings Farms CARR-1739, Panora Acres CARR-1676, and MD-Delight CARR-1740. At the time of the survey, Coldsprings Farms was the largest family-owned producer of fluid milk in Carroll County. The farm is also considered one of the largest family-owned dairy farms in the State of Maryland—milking a herd of 1,100 cows, while simultaneously farming over 2,200 acres.¹³¹

¹³⁰ Mary Grace Keller, “With Dairy Farms Disappearing in Carroll County, Milk Consumption Flat, Farmers look to Alternative Revenue Sources,” *Carroll County Times*, October 1, 2019.

¹³¹ Genevieve Lister, “Maryland Dairy Farmers Work to Improve the Health of Estuaries,” U.S. Department of Agriculture Blog, found at <https://www.usda.gov/media/blog/2015/09/21/maryland-dairy-farmers-work-improve-health-estuaries>.

Despite the dramatic loss of dairy farms, Carroll County still retained 1,174 total farms in 2017, meaning agriculture is still central to its economy. These farms account for 146,778 acres of land—51% of the total land in the county. Carroll County’s agricultural products had a total market value of \$110,447,000—with crop sales accounting for 66% of the total (\$72,493,000), and livestock sales the remaining 34% (\$37,954,000). These agricultural products sold in Carroll County account for 4% of the state’s agricultural sales. The milk produced in Carroll County was valued at \$24,581,000 in 2017—making Carroll County the third highest milk producing county in the State of Maryland (out of a total of 18 milk producing counties).¹³² The sale of milk, and the dairy industry, is still a large part of Carroll County’s agricultural economy—22.2% of the total market value of agricultural products sold was from the milk sales.

¹³² United States Department of Agriculture, “2017 Census of Agriculture County Profile: Frederick County, Maryland,” https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Maryland/cp24021.pdf

Appendix C: Dairy Farming in Cecil County

Cecil County is located in the northeastern corner of the State of Maryland. The county is bounded on the north by Chester County, Pennsylvania, and to the east by New Castle County, Delaware. To the west, the county is bordered by the Susquehanna River. To the south the county is bounded by the Sassafras River, and Kent County, Maryland. Topographically, Cecil County is located in both the Piedmont Region (north of present-day U.S. Route 40), and the Atlantic Coastal Plain, which historically created two distinct agricultural regions in the county.

Cecil County was first settled by Europeans in the early seventeenth century, who initially grew tobacco as their primary agricultural product. This focus on tobacco cultivation lasted into the early eighteenth century; however, several factors cause many early settlers to stop farming tobacco, and switch to the production of grains. First, growing tobacco was highly labor intensive, and relied heavily on enslaved labor. Second, by the middle of the eighteenth century, the cultivation of tobacco had exhausted much of the County's agricultural lands. Lastly, there was an increased demand for the production of food crops like wheats, oats, and barley.

During the eighteenth century, two distinct agricultural regions emerged in Cecil County—marked by the fall line between the upland Piedmont region and the lower Atlantic Coastal Plain. Farmers north of the Piedmont line tended to live on smaller, family-run farms, which relied on few to no enslaved persons for labor. These farmers produced small grains as their chief crop; however, almost all farms practiced diversified farming. In the Atlantic Coastal Plain (Tidewater) region of Cecil County, south of the fall line, the farms were larger in acreage—and many farms were tenanted or had farm managers and relied more on enslaved labor. These farms also tended to be self-sufficient in terms of food production, as well as more insular.

Multiple railroad lines traversed Cecil County by the early- to mid-nineteenth century, tying Piedmont farmers to urban markets. These rail lines included the Baltimore & Ohio Railroad (founded 1830), the Philadelphia, Wilmington, & Baltimore Railroad (founded 1836), the Pennsylvania Railroad (founded 1846), and lastly the Philadelphia and Baltimore Central Railroad (founded in 1854). These various railroads tied many of the Piedmont farmers in Cecil County into larger agricultural networks servicing the cities of Baltimore (MD), Philadelphia (PA), and Wilmington (DE).¹³³ This allowed Piedmont farmers to sell several products off the

¹³³ Simon J. Martenet, *Martenet's Map of Cecil County, Maryland: from the coast, and original surveys*, (Baltimore?: S. J. Martenet, 1858) <https://www.loc.gov/item/2002624017/>.

farm, including poultry, hogs, sheep, horse hay, eggs, and increasingly, dairy products—especially butter. In fact, in 1854, an advertisement placed by the Philadelphia, Wilmington, and Baltimore Railroad in the *Cecil Democrat* announced the addition of the rail company’s new milk cars, hoping to capture more of the growing dairy market.¹³⁴

While Cecil County was not the largest producer of dairy products in the state, its advantageous connection to several urban markets facilitated the steady increase in its dairy production from the mid-nineteenth century onward. In 1850 (the first available Agricultural Census), Cecil County had 4,184 “milch” cows.¹³⁵ By 1860 this number had grown to 5,968 milch cows.¹³⁶ Ten years later in 1870 this number had slightly decreased to 5,797 milch cows. In 1870, Cecil County farmers produced 445,720 pounds of butter on farms, 50 pounds of cheese were made on farms, and sold 39,697 gallons of milk.¹³⁷ Just ten years later in 1880, the amount of milk sold in Cecil County increased by a factor of almost six—with farmers selling 226,342 gallons of milk. During this same year, the butter made on farms increased to 603,716 pounds, while no cheese production was recorded.¹³⁸ This upward trend of increased butter and milk production continued in the 1890 Agricultural Census. This time the amount of milk sold increased by a factor of ten from the previous decade—rising to 2,375,854 gallons of milk sold. Butter rose only slightly to 617,940 pounds produced.¹³⁹ In fact, 1890 marked the peak of butter sales in Cecil County, after which fluid milk dominated production and sales of dairy products.

By the turn of the twentieth century, Cecil County farmers were producing about 5.6% of the total milk (3,641,622 gallons) in the State of Maryland on 1,477 farms.¹⁴⁰ By 1900, the amount of butter made in Cecil County had decreased to 484,790 pounds. Again, no cheese production was reported in Cecil County that year.

¹³⁴ Anne Copley, “Cecil County Agriculture of Days Gone By,” *Cecil Whig*, August 24, 2019.

¹³⁵ United States Department of Agriculture. *U.S. Census of Agriculture Maryland State Data*, United States, 1850. Web archive. https://agcensus.library.cornell.edu/census_year/1850-census/.

¹³⁶ United States Department of Agriculture. *U.S. Census of Agriculture Maryland State Data*, United States, 1860. Web archive. https://agcensus.library.cornell.edu/census_year/1860-census/.

¹³⁷ Recorded as “milk sold, or sent to butter and cheese factories”; United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1870. Web archive. https://agcensus.library.cornell.edu/census_year/1870-census/.

¹³⁸ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1880. Web archive. https://agcensus.library.cornell.edu/census_year/1880-census/.

¹³⁹ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1890. Web archive. https://agcensus.library.cornell.edu/census_year/1890-census/.

¹⁴⁰ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1900. Web archive. https://agcensus.library.cornell.edu/census_year/1900-census/.

The production of fluid milk in Cecil County continued to grow steadily over the course of the Phase II time period (1910-1945 +/-), mirroring the growth of the fluid milk industry in the state (see figure 38).

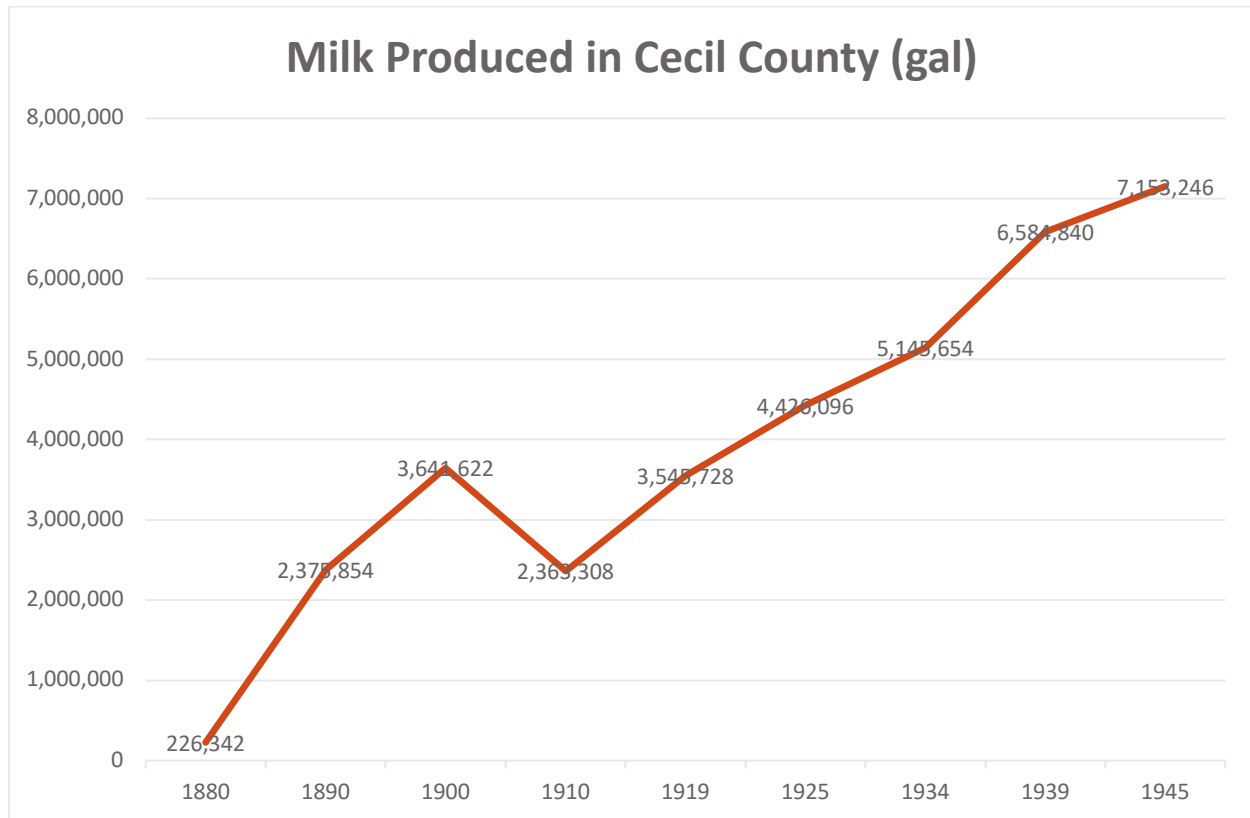


Figure 38. Amount of milk produced in Cecil County in gallons during the Period II (1880-1945) time period.

During this same time period, the amount of butter produced in Cecil County continued to decline. This mirrored statewide and national trends in the production of dairy products. Over the course of these five decades, the Agricultural Census changed how butter was recorded—dropping the category “butter made on farms (in pounds)” in 1945, and by 1950, the sale of butter, buttermilk, skim milk, and cheese (in dollars) were combined into one category. These changes to the Agricultural Census perhaps indicate two things: first, it is likely that by the end of this time period most of American dairy farmers had switched to the production and sale of fluid milk, and secondly, as such, the production and sale of other dairy products, including butter and cheese, were now so small that it made more sense to combine them as a single category.

To keep up with the increased demand for fluid milk in the first half of the twentieth century, the number of cows milked in Cecil County continued to grow steadily. Starting in 1910, the number of cows milked on farms

was 6,462, and this number would climb steadily over the next few decades. By 1925, a total of 9,539 cows were milked, followed by 8,909 cows tallied in 1929, then 9,912 cows in 1934, and 10,807 cows in 1939. By the end of this time period, in 1945, a total of 11,211 cows were being milked in Cecil County. While the number of cows steadily increased over the first half of the twentieth century, so did each individual cow's milk production. On average, each dairy cow in Cecil County was producing 365 gallons a milk a year in 1910, but by 1945, each dairy cow was now producing 638 gallons of milk per year (see figure 39). Several factors contributed to this increase in production—the sanitation reform movement, the rise of scientific breeding and selection, better and more nutritious cow feed, and a switch in the livestock breeds themselves. During this time period, many farmers upgraded from general cow breeds popular in the nineteenth century, to the high-producing dairy cow breeds in the early-twentieth century. The two most popular cow breeds encountered during this survey were Holsteins and Guernsey.

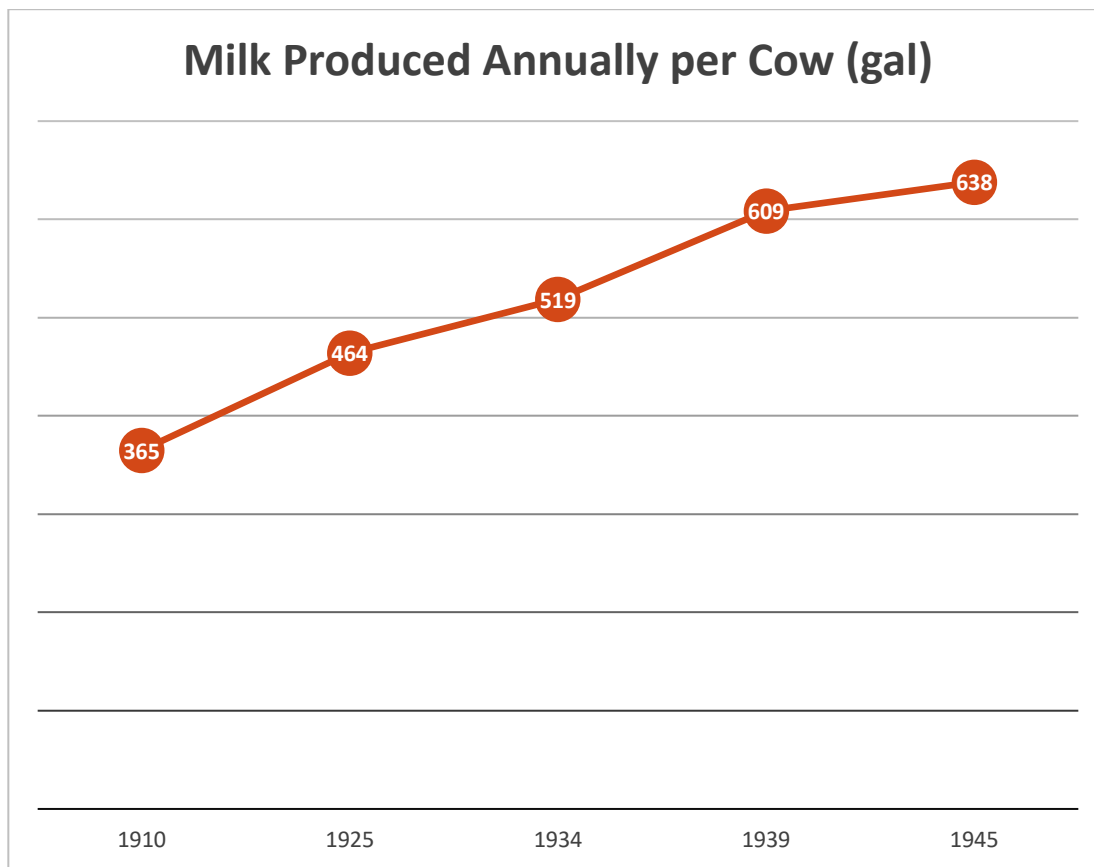


Figure 39. Graph showing the increase in milk produced per cow annually in Cecil County from 1910 to 1945.

The third time period identified in this dairy context (1945-1985 +/-) is marked by the peak production of dairy products in Cecil County, followed by a sharp decline of the industry the period's latter decades. In 1950, there were 12,266 milk cows on 1,906 farms, producing 28,932 gallons of milk daily.¹⁴¹ By 1954, the number of dairy farms had decreased to 1,615, but the number of milk cows rose to 12,944. These cows produced 27,215 gallons of milk daily.¹⁴² The year 1959 was the peak for total milk sold (in pounds) in Cecil County—with farmers selling 10,435,139 gallons of whole milk (see figure 40).

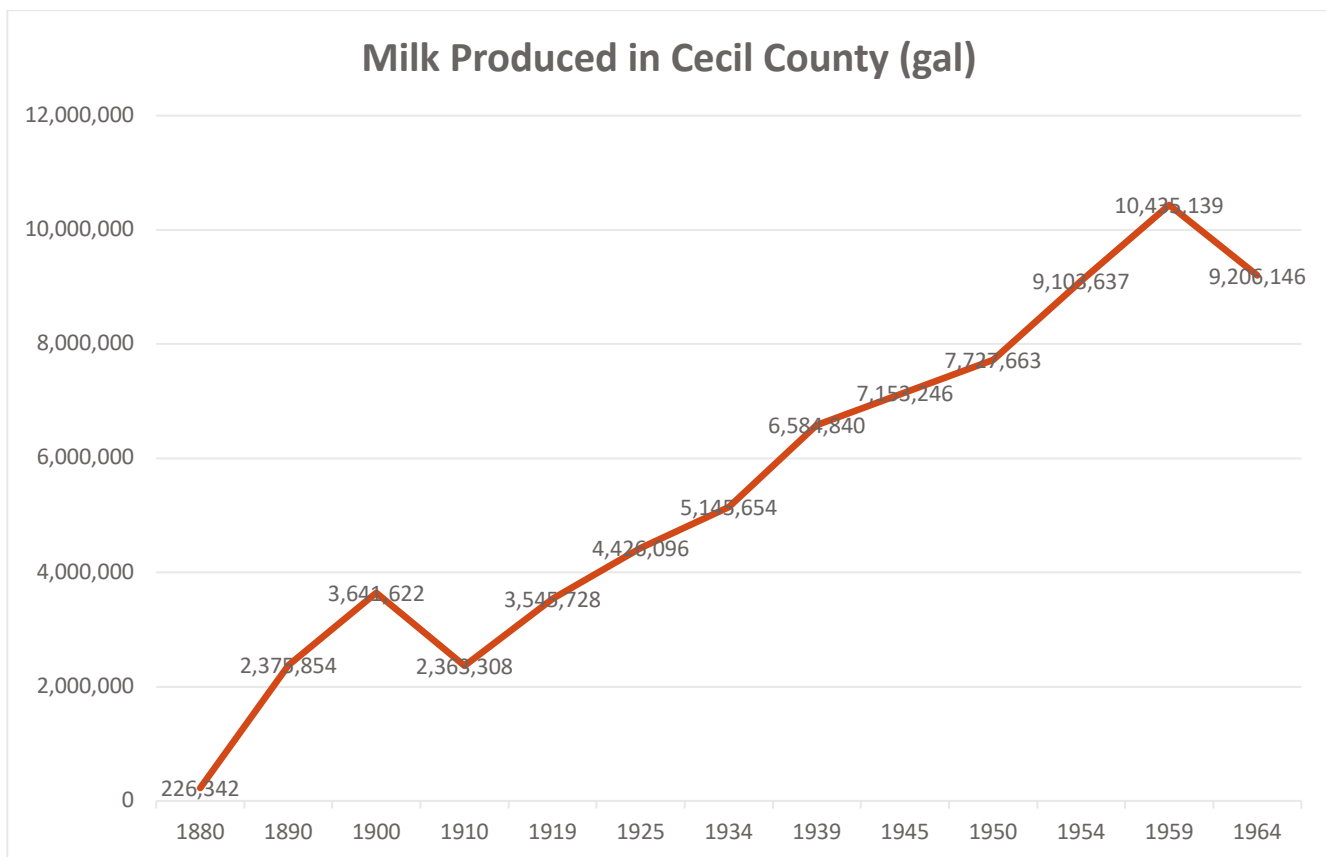


Figure 40. Graph showing the annual milk production (in gallons) in Cecil County from 1880 to 1964.

After the 1950s, which marked both the peak of milk production, as well as the largest number of dairy cows, the next several decades are marked by steady decline of the dairy industry as a whole in Cecil County—especially in the number of dairy farms, as well as the volume of dairy products produced. By 1959, the

¹⁴¹ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1950. Web archive. https://agcensus.library.cornell.edu/census_parts/1950-delaware-maryland-and-district-of-columbia/.

¹⁴² United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1954. Web archive. https://agcensus.library.cornell.edu/census_parts/1954-maryland/.

number of dairy farms producing milk in Cecil County had dropped to 600, and just five years later, in 1964, it dropped again to 499.¹⁴³ This downward trend of the number of dairy farms in Cecil County only accelerated in the 1970s and 1980s. By 1978, the number of dairy farms had dropped sharply to 113 farms, and by 1982, the number had fallen to 107. By 1987, only 76 dairy farms remained, and by 1992, it was just 51 (see figure 41). This sharp decline in dairy farms in Cecil Country reflects statewide trends during the same decades.

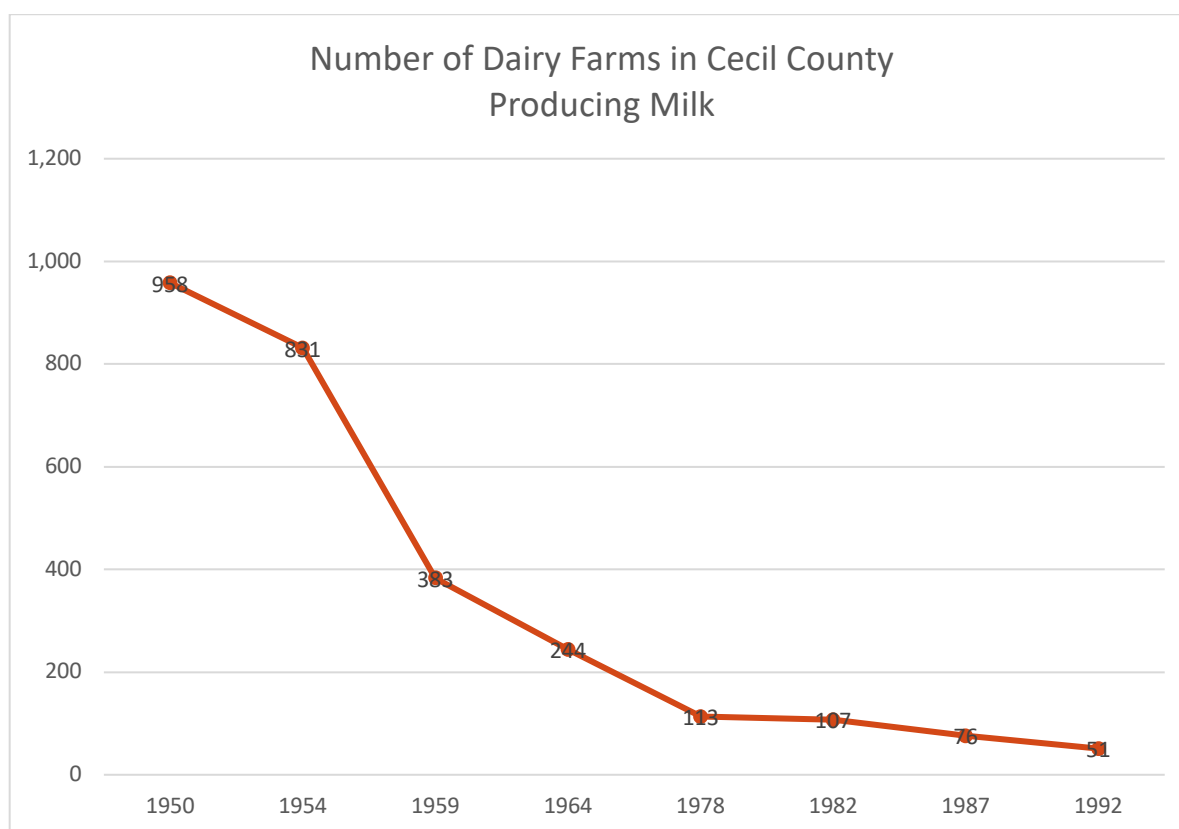


Figure 41. Graph showing the steep decline in the number of dairy farms in Cecil County from 1950-1992.

¹⁴³ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1959. Web archive. https://agcensus.library.cornell.edu/census_parts/1959-maryland/; United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1964. Web archive. https://agcensus.library.cornell.edu/census_parts/1964-maryland/.

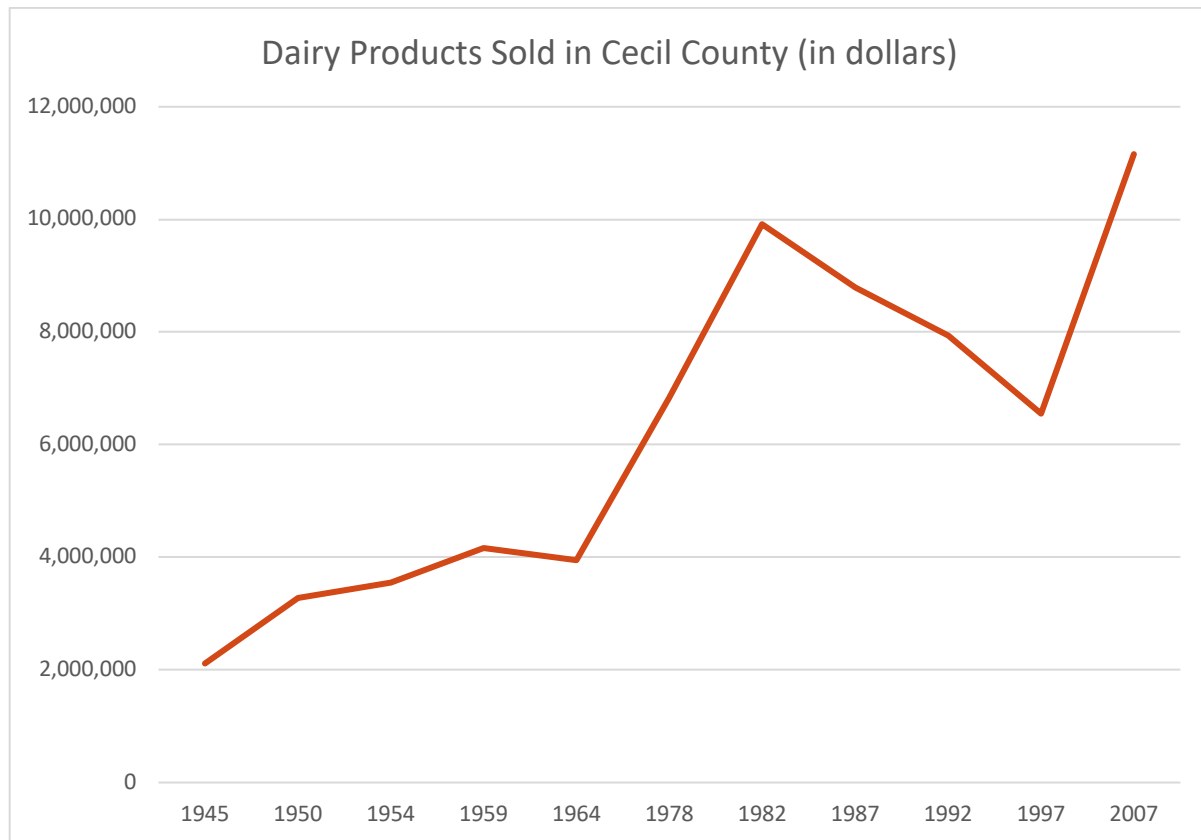


Figure 42. Graph showing the growth and decline (in dollars) of Cecil’s dairy industry during from 1945-2007.

As of 2018, twenty-nine farms were still producing milk in Cecil County. Twenty of those twenty-nine dairy farms are run by Amish families, many of whom have relocated from Pennsylvania.¹⁴⁴ Many Amish families have purchased older dairy farms from the “English” farmers who have retired from the business. The majority of the operating dairy farms in Cecil County sell fluid milk directly to companies or milk cooperatives. For instance, the only surveyed active dairy farm in Cecil County for this study, Long Green Farm (CE-208), sells its milk to Land O’Lakes. At least two known local farms are selling dairy products directly to consumers (not surveyed), including Kilby’s Creamery (129 Strohmaier Lane, Rising Sun / no MIHP #) that specializes in ice cream, and Chesapeake Gold Farms (CE-234) that specializes in cheese, yogurt, and butter production.

Despite the dramatic loss of dairy farms, Cecil County is still largely an agricultural landscape. In 2017, the last year the agricultural census was taken, there were 533 farms in Cecil County, covering 73,793 acres of land—

¹⁴⁴Betsy Freese, “Maryland Dairy Digs Deep to Diversify,” *Successful Farming*, April 29, 2019. Article available online at <https://www.agriculture.com/livestock/dairy/maryland-dairy-digs-deep-to-diversify> ; Lisa Tome, “Cecil’s Dairy Farms are Now Mostly Amish-Owned,” *Southern Lancaster County Chronicle*, July 19, 2017. Article available online at <http://www.solancochronicle.com/top-stories/cecils-dairy-farms-are-now-mostly-amish-owned>

33.3% of the total land in the county. Cecil County's agricultural products had a total market value of \$136,820,000—with crop sales accounting for 57% of the total (\$78,051,000), and livestock sales the remaining 43% (\$58,770,000). These agricultural products sold in Cecil County accounted for 6% of the state agricultural sales. The milk produced in Cecil County was valued at \$6,043,000—making Cecil County the sixth highest milk producing county in the State of Maryland (out of a total of 18 milk producing counties).¹⁴⁵ The sale of milk accounted for only 4.5% of the total agriculture produced and sold in the county, with floriculture accounting for 37.4% of the Cecil County's agricultural sales. The next largest agricultural product produced was grains (15.7%).

¹⁴⁵ United States Department of Agriculture, "2017 Census of Agriculture County Profile: Cecil County, Maryland," https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Maryland/cp24015.pdf.

Appendix D: Dairying Farming in Frederick County

Frederick County is located in western Maryland and spans the boundaries between the Piedmont Plateau and the Appalachian Mountains. The county is mountainous, featuring both the Catoctin Mountains and the South Mountains (an extension of the Blue Ridge Mountains), with the Middletown Valley located between them. Frederick County is bounded on the north by Adams County, Pennsylvania, on the east by Carroll County, on the south mostly by Montgomery County, on the southwest by the Potomac River, which divides Frederick County from Loudoun County, Virginia, and on the west by Washington County.

The region that would become Frederick County was first settled in the seventeenth century. Frederick County was established as a political entity in 1748, when it was partitioned from parts of Prince George's and Baltimore Counties.¹⁴⁶ Early seventeenth-century settlers of this region were a mixture of people, including “well-to-do Englishmen” relocating from the tidewater region, or German immigrants and descendants moving south from Pennsylvania.¹⁴⁷ Also present among early settlers were African Americans who were brought by European settlers (and their descendants) as enslaved labor.¹⁴⁸ Early settlers established a diversified agricultural economy, growing a mixture of crops including grain, livestock, and timber, along with tobacco.¹⁴⁹ By the nineteenth century, Frederick County's valley lands were famous for their productivity and fertility. In 1882, historian J. Thomas Scharf described Frederick County's agricultural lands as “agriculturally, the most productive...in the State. The pasture is so superior that stock-raising has long been one of the distinctive features of Frederick County farming.”¹⁵⁰ In addition to growing livestock, Frederick County farmers in the nineteenth century were growing wheat, rye, oats, and corn.¹⁵¹

Due to geographic and transportation advantages, since the beginning of the nineteenth century Frederick County was ideally positioned to sell agricultural goods to distant urban markets. Several turnpikes, and later railroads, traversed all parts of the county—connecting Frederick County farmers to many different cities, and even other states. In 1805, the Baltimore and Frederick Town Turnpike Company was formed to connect the City of Baltimore and the City of Frederick. This road quickly became the first federally-funded road (renamed the National Road / National Turnpike) and opened Frederick County trade to the east and west—eventually

¹⁴⁶ Reed, Herrin, and Powell, 1; Scharf, Vol. 1, 358.

¹⁴⁷ Reed, Herrin, and Powell, 1.

¹⁴⁸ Reed, Herrin, and Powell, 1.

¹⁴⁹ Reed, Herrin, and Powell, 5.

¹⁵⁰ Scharf, Vol. 1, 362.

¹⁵¹ Scharf, Vol. 1, 362.

connecting the Potomac and Ohio Rivers, as well as linking Frederick County to Pennsylvania, West Virginia, Ohio, Indiana, and Illinois.¹⁵² In addition to the National Road, there were twelve other turnpike roads in Frederick County by the late nineteenth century.¹⁵³ By 1831, the Baltimore & Ohio Railroad built the Frederick Branch, which connected the City of Frederick to the mainline railroad, tying Frederick County farmers to the Baltimore market.¹⁵⁴

Frederick County farmers quickly capitalized on their advantageous location along railways and turnpikes, and by the nineteenth century were one of the leading producers of solid dairy products in the state, namely butter. In 1850 (the first available Agricultural Census), Frederick County farmers owned the most “milch” cows in the state—a total of 9,519 cows, or 11% of the total cows in the state.¹⁵⁵ By 1860, this number had grown to 11,180 milch cows, with Frederick County farmers again owning the most milch cows in the state.¹⁵⁶ Ten years later, in 1870, the number of milch cows grew again to 11,907. Frederick County farmers still owned the most milch cows in the state, this time with 12.5% of the total milk producing cows in the state.¹⁵⁷ During these same decades (1850-1870) the Agricultural Census also recorded the amount of butter produced. Frederick County farmers, with their large dairy herds, produced the most butter in the state for all three decades. In 1850, the total amount of butter produced was 723,064 pounds or 19% of the butter produced in Maryland. In 1860, the amount of butter produced rose to 969,797 pounds or 18.4% of the total butter produced in Maryland. Lastly, in 1870, Frederick farmers produced 877,784 pounds of butter, for a total of 17.5% of the Maryland’s butter production.¹⁵⁸

While the amount of butter produced decreased in 1870, this reduction in butter production might be explained by the rise of fluid milk production. The year 1870 was the first for which the Federal Agricultural Census recorded the gallons of fluid milk “sold or sent to a butter or cheese factory.” That year Frederick farmers sold

¹⁵² Scharf, Vol. 1, 438; “Historic National Road-MD,” National Scenic Byway Foundation, December 24, 2021, <https://nsbfoundation.com/nb/historic-national-road-md/>.

¹⁵³ Scharf, Vol. 1, 438.

¹⁵⁴ Scharf, Vol. 1, 438.

¹⁵⁵ United States Department of Agriculture. *U.S. Census of Agriculture Maryland State Data*, United States, 1850. Web archive. https://agcensus.library.cornell.edu/census_year/1850-census/.

¹⁵⁶ United States Department of Agriculture. *U.S. Census of Agriculture Maryland State Data*, United States, 1860. Web archive. https://agcensus.library.cornell.edu/census_year/1860-census/.

¹⁵⁷ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1870. Web archive. https://agcensus.library.cornell.edu/census_year/1870-census/.

¹⁵⁸ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1870. Web archive. https://agcensus.library.cornell.edu/census_year/1870-census/.

72,308 gallons of fluid milk—the fourth highest in the state.¹⁵⁹ During the remaining decades of the nineteenth century (1880s and 1890s) Frederick County farmers increased their production of both fluid milk and butter. In 1880 farmers produced 1,161,541 pounds of butter (again Frederick County farmers were the top producer in the state).¹⁶⁰ By 1890, Frederick County farmers produced 1,311,772 pounds of butter. This year Frederick County farmers produced the second most butter in the state and were outproduced for the first time by Baltimore County farmers by nearly 140,000 pounds of butter.¹⁶¹ During the 1880s and 1890s the amount of fluid milk produced by Frederick County farmers grew exponentially. In 1880, 264,511 gallons of milk were produced—increasing production from 1870 by 3.5 times, ranking Frederick farmers as the fifth largest milk producing county in the state.¹⁶² By 1890, the amount of fluid milk produced by Frederick County farmers exploded—producing 25 times more milk than produced in 1870. The 6,703,436 gallons of milk produced in 1890 earned Frederick farmers the status of second largest milk-producing county in the state, behind only Baltimore County.¹⁶³

By the turn of the twentieth century, Frederick County farmers continued to produce large amounts of butter and milk, and quickly became the highest fluid milk producing county in the state—a title Frederick County farmers held for the majority of the twentieth century. In 1900, Frederick farmers produced 13.6% of the total milk (10,126,394 gallons) in the State of Maryland, on 3,330 farms.¹⁶⁴ This was the second largest amount of milk produced by a county in Maryland, with Frederick farmers again placing second, only behind Baltimore County. Also in 1900, Frederick County farmers produced the most butter in the state (1,498,740 pounds), representing the peak year of butter production for the county.¹⁶⁵

Frederick County farmers continued to produce large amounts of fluid milk over the course of the Phase II time period (1880-1945 +/-), mirroring the growth of the fluid milk industry in the State of Maryland (see figure 43).

¹⁵⁹ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1870. Web archive. https://agcensus.library.cornell.edu/census_year/1870-census/.

¹⁶⁰ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1880. Web archive. https://agcensus.library.cornell.edu/census_year/1880-census/.

¹⁶¹ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1890. Web archive. https://agcensus.library.cornell.edu/census_year/1890-census/.

¹⁶² United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1880. Web archive. https://agcensus.library.cornell.edu/census_year/1880-census/.

¹⁶³ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1890. Web archive. https://agcensus.library.cornell.edu/census_year/1890-census/.

¹⁶⁴ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1900. Web archive. https://agcensus.library.cornell.edu/census_year/1900-census/.

¹⁶⁵ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1900. Web archive. https://agcensus.library.cornell.edu/census_year/1900-census/.

By 1910, Frederick County became the largest fluid milk county in the state—producing 6,945,154 gallons of milk—and it would remain the most productive milk county in the state for much of the twentieth century. The county would go on to produce a staggeringly high volume of milk between 1940 and 1950 (recorded in the Agricultural Census in 1940, 1945, and 1950), with Frederick County farmers outproducing the second and third milk-producing counties (Harford and Carroll) combined.¹⁶⁶ In fact, over these same years, Frederick County produced between 17.4% (1940) and 22.3% (1950) of the total fluid milk in the State of Maryland.¹⁶⁷

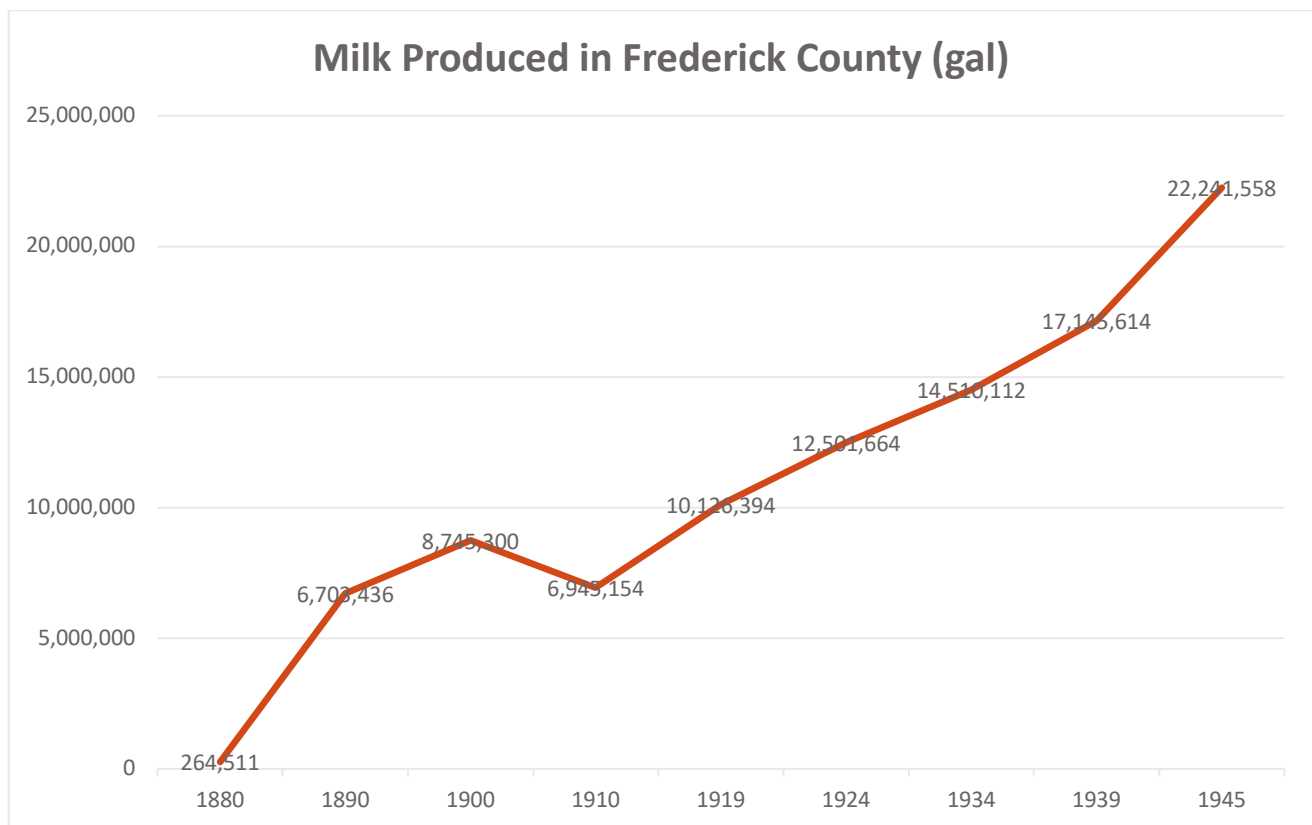


Figure 43. Amount of milk produced in Frederick County in gallons during the Period II (1880-1945) time period.

¹⁶⁶ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1940. Web archive. https://agcensus.library.cornell.edu/census_parts/1940-maryland/; United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1945. Web archive. https://agcensus.library.cornell.edu/census_parts/1945-maryland-and-district-of-columbia/; United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1950. Web archive. https://agcensus.library.cornell.edu/census_parts/1950-delaware-maryland-and-district-of-columbia/.

¹⁶⁷ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1940. Web archive. https://agcensus.library.cornell.edu/census_parts/1940-maryland/; United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1945. Web archive. https://agcensus.library.cornell.edu/census_parts/1945-maryland-and-district-of-columbia/; United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1950. Web archive. https://agcensus.library.cornell.edu/census_parts/1950-delaware-maryland-and-district-of-columbia/.

While the production of fluid milk exploded in Frederick County during the first half of the twentieth century, the production of butter declined sharply. In 1910, Frederick County farmers produced 1,354,173 pounds of butter. By 1925 (the next year this information was recorded in the Agricultural Census), the production of butter sharply fell by more than half to 557,594 pounds. Ten years later, in 1934, the amount of butter produced again was reduced by about half, with farmers producing 283,319 pounds. By 1939, the last year butter was enumerated as a separate category in the Agricultural Census, Frederick farmers only produced 171,312 pounds of butter.¹⁶⁸ This sharp decline in butter production mirrored the butter industry statewide. Over the course of these five decades, the Agricultural Census changed how butter was recorded—dropping the category “butter made on farms (in pounds)” in 1945, and by 1950, the sale of butter, buttermilk, skim milk, and cheese (in dollars) were combined into one category. These changes to the Agricultural Census perhaps indicate two things: first, by the end of this time period, most of American dairy farmers had switched to the production and sale of fluid milk, and secondly, as such, the production and sale of other dairy products, including butter and cheese, were now so small that it made more sense to combine them as a single category.

To keep up with the increased demand for fluid milk, the number of dairy cows in Frederick County continued to grow steadily during this time period as well. Starting in 1910, the number of cows milked on farms was 17,042.¹⁶⁹ The next year census data is available, in 1925, 22,981 cows were milked, which then grew to 24,460 in 1929, and by 1939, a total of 26,753 cows. By 1945 (the end of the Phase II time period), Frederick County totaled 31,553 cows milked. It was not just the number of cows and the gallons of fluid milk produced that grew over this period. The amount of milk per dairy cow also steadily increased. On average, each dairy cow in Frederick County was producing 407.5 gallons a milk a year in 1910. By 1945, each dairy cow was now producing 705 gallons of milk a year (see figure 44). Of the three counties studied in this survey, Frederick County cows produced the largest amount of milk per cow (in gallons). Several factors contributed to this increase in production—the sanitation reform movement, the rise of scientific breeding and selection, better and more nutritious cow feed, and a switch in the livestock breeds themselves. During this time period, many farmers upgraded from general cow breeds popular in the nineteenth century, to high-producing dairy cow breeds in the early-twentieth century. The two most popular cow breeds encountered during this survey were Holsteins, Jerseys and Guernsey.

¹⁶⁸ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1940. Web archive. https://agcensus.library.cornell.edu/census_parts/1940-maryland/.

¹⁶⁹ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1900. Web archive. https://agcensus.library.cornell.edu/census_year/1900-census/.

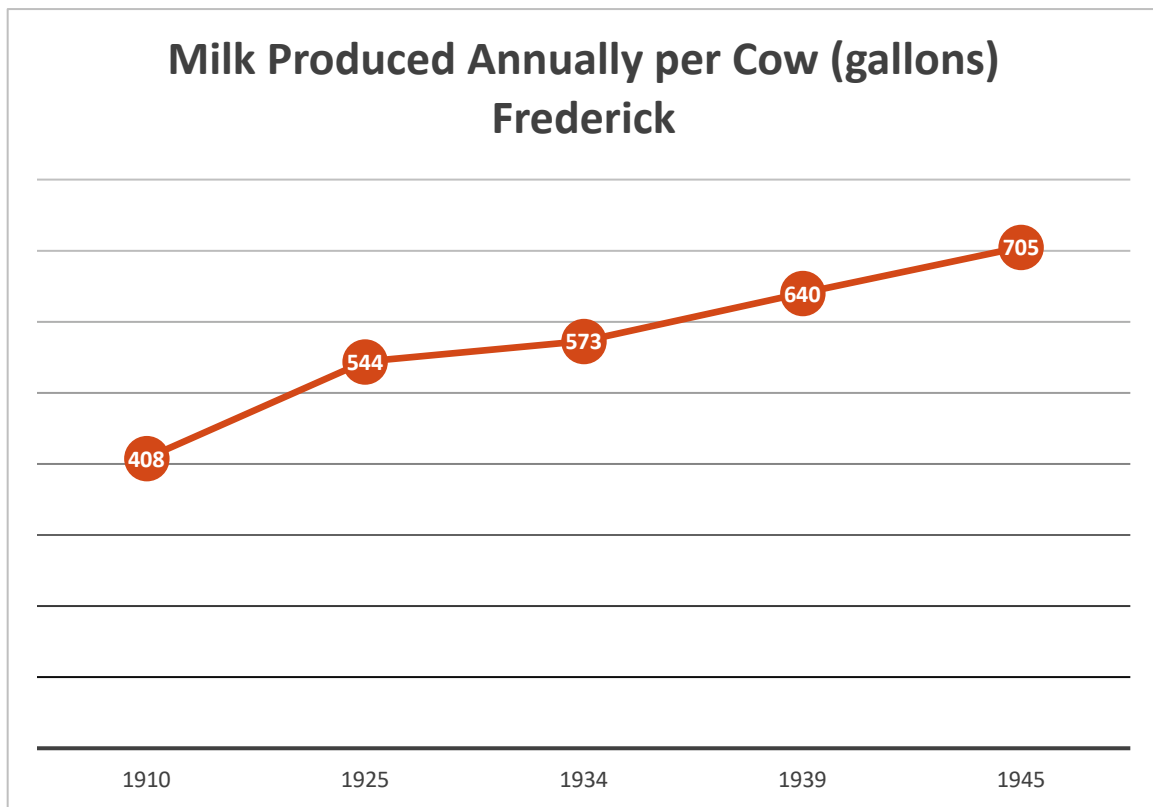


Figure 44. Graph showing the increase in milk produced per cow annually in Frederick County from 1910 to 1945.

The third time period identified in the dairy context (1945-1985 +/-) is marked by both the peak sale of dairy products in Frederick County, as well as a sharp decline in the number of dairy farms. In 1950, there were 37,594 milk cows on 2,205 farms.¹⁷⁰ These cows produced 101,769 gallons of milk daily, again making Frederick County the largest milk producing county in the state.¹⁷¹ By 1954 the number of dairy farms had decreased to 1,973, but the number of milk cows rose to 44,284. These milk cows produced 96,918 gallons of milk daily.¹⁷² Unfortunately, in 1964 the Agricultural Census stopped recording “milked produced” (in either gallons or pounds) as a category—that year Frederick County farmers produced 44,149,227 gallons of milk.¹⁷³

¹⁷⁰ “Milk cows farms reporting”

¹⁷¹ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1950. Web archive. https://agcensus.library.cornell.edu/census_parts/1950-delaware-maryland-and-district-of-columbia/.

¹⁷² United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1954. Web archive. https://agcensus.library.cornell.edu/census_parts/1954-maryland/.

¹⁷³ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1964. Web archive. https://agcensus.library.cornell.edu/census_parts/1964-maryland/.

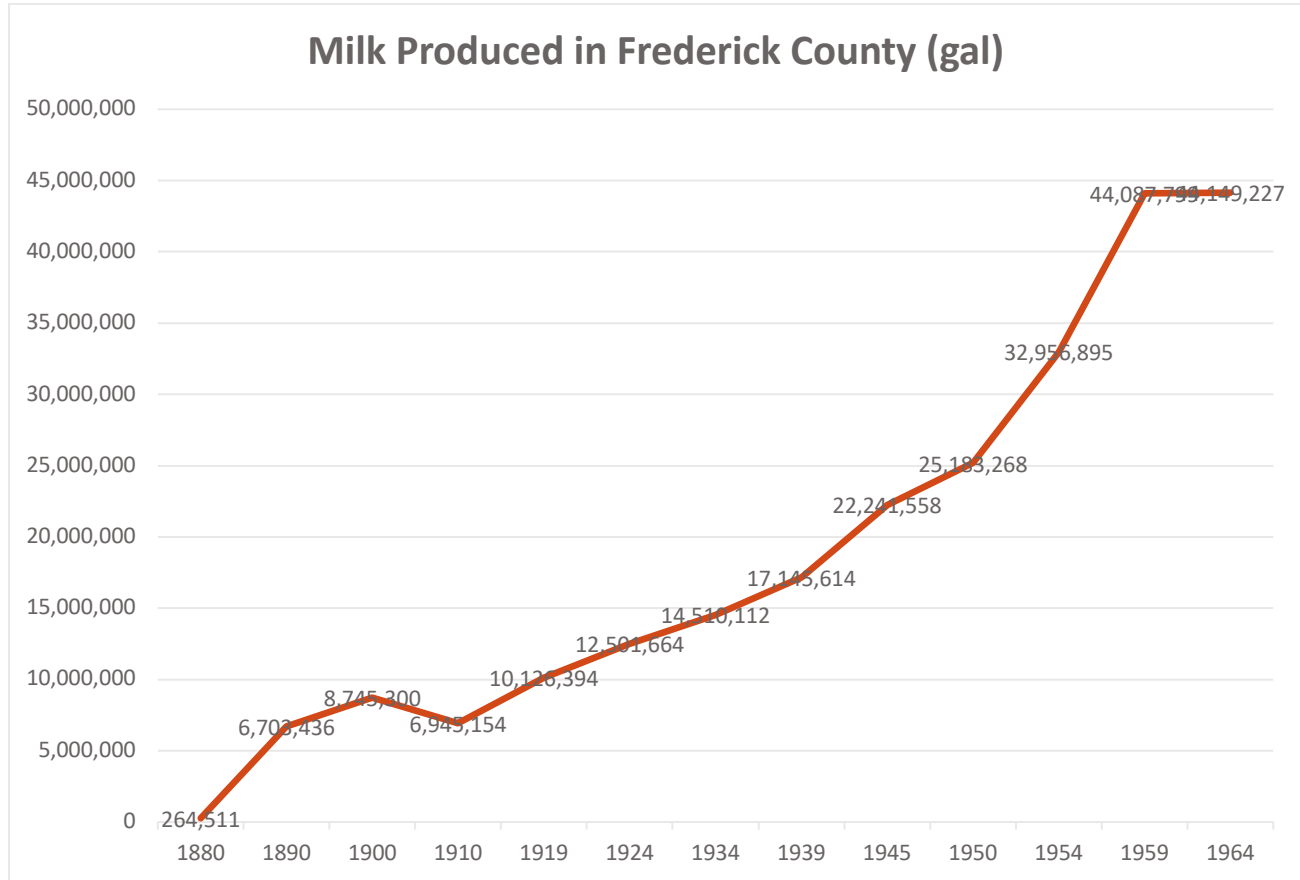


Figure 45. Graph showing the annual milk production (in gallons) in Frederick County from 1880 to 1964.

Over the next several agricultural censuses (1954-1982) this relationship between an increase in the value of dairy products sold, and a steady decrease in the number of dairy farms continued (see figures 46 and 47). This relationship continued through 1982, just 3 years before the federal government instituted the Dairy Termination Program. 1982 marked the peak of dairy sales, after which, sales slowly declined into the twenty first century. The number of farms also continued to decline after the Dairy Termination Program—in 1982 there were 531 dairy farms, in 1987 the number decreased to 416, and by 1992 this number was only 332.¹⁷⁴

¹⁷⁴ United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1982. Web archive https://agcensus.library.cornell.edu/census_parts/1982-maryland/; United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1987. Web archive. https://agcensus.library.cornell.edu/census_parts/1987-maryland/; United States Department of Agriculture. *U.S. Census of Agriculture Maryland County Data*, United States, 1992. Web archive. https://agcensus.library.cornell.edu/census_parts/1992-maryland/.

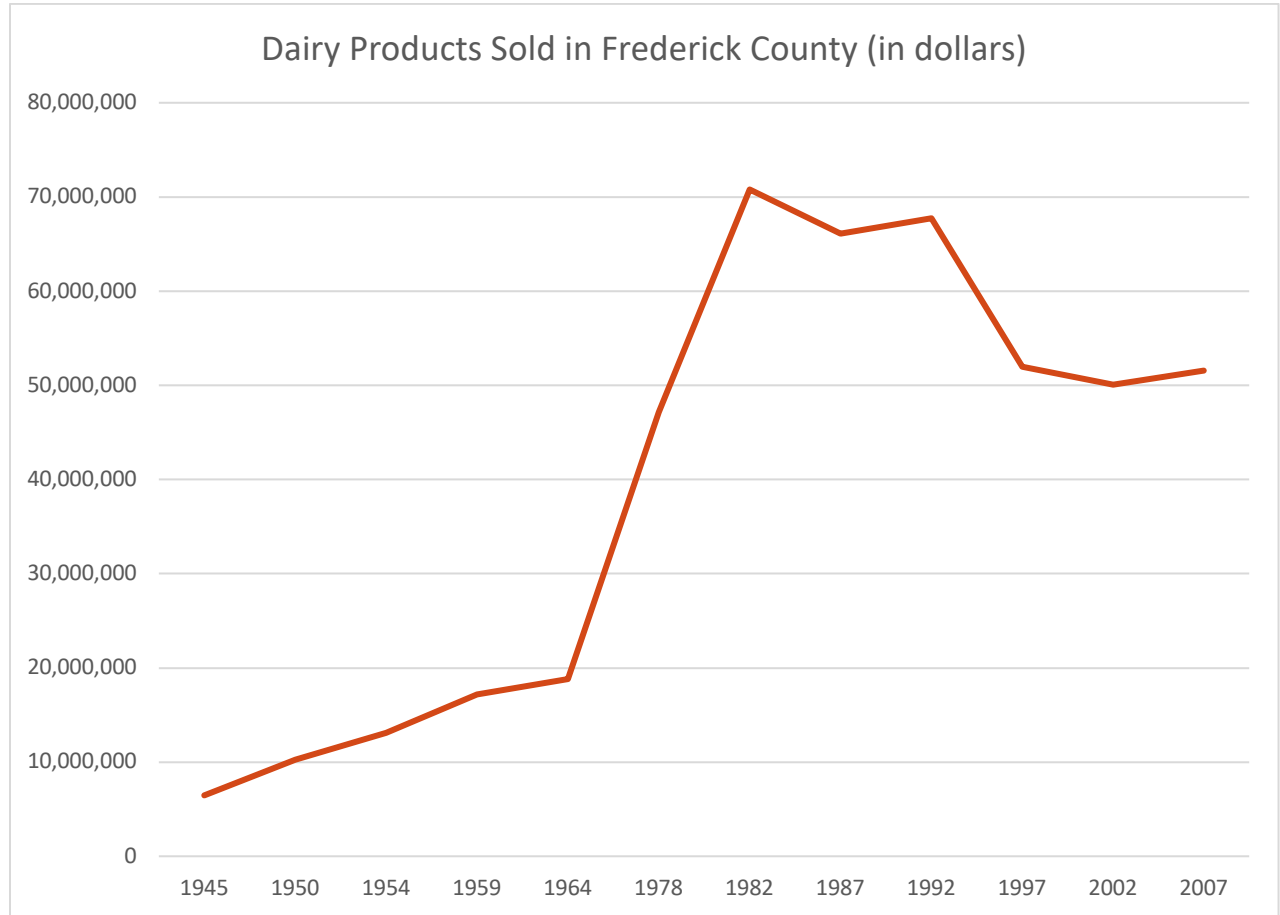


Figure 46. Graph showing the growth and decline (in dollars) of Frederick's dairy industry during from 1945-2007.

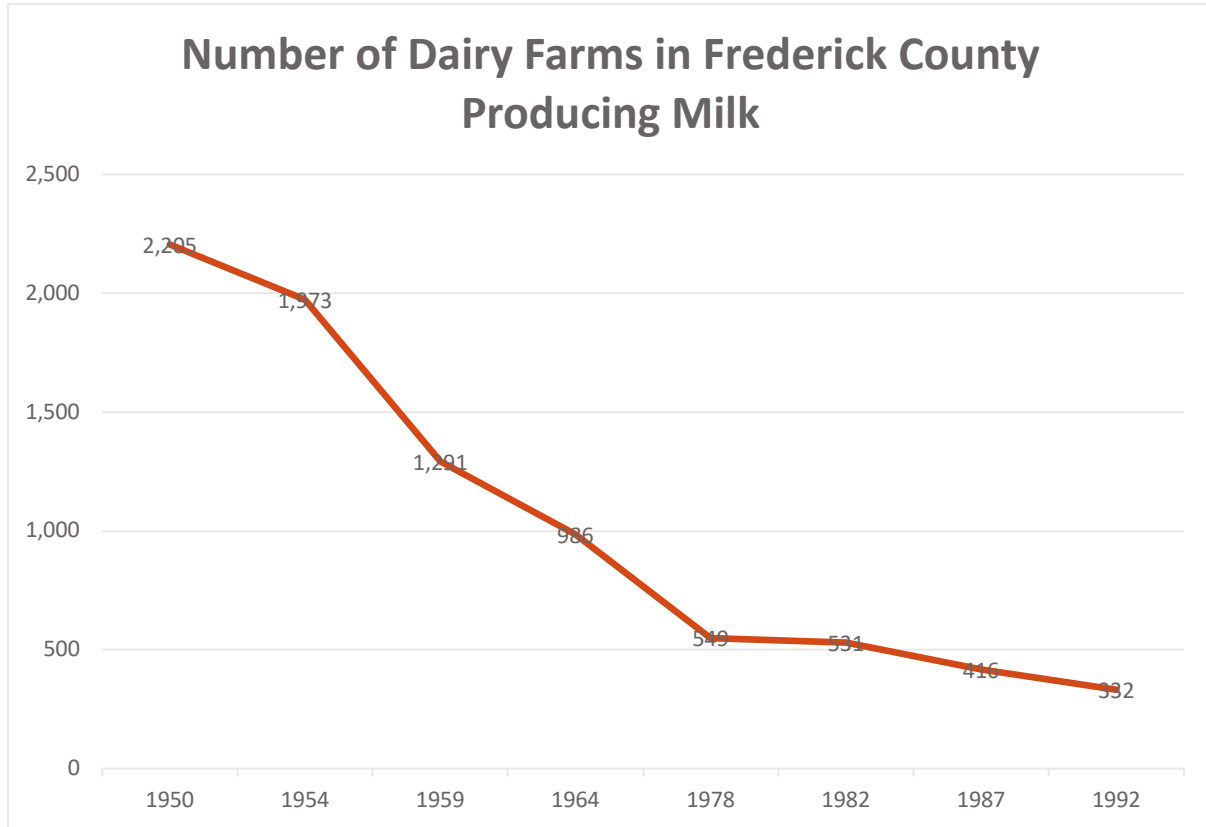


Figure 47. Graph showing the steep decline in the number of dairy farms in Frederick County from 1950-1992.

In 2015, there were 99 active dairy farms in Frederick County, and unfortunately, as of 2019, that number had dropped to 60.¹⁷⁵ The majority of the operating dairy farms in Frederick County sell fluid milk directly to milk cooperatives, or private companies. For instance, the only surveyed active dairy farm in Frederick County as part of this study, Glen-Toctin Farms (F-2-135), sells its milk to the Maryland & Virginia Milk Producers Cooperative Association. There are a few local dairy farms that still sell dairy products directly to consumers, although none were surveyed as part of this project. They include South Mountain Creamery, located at 8305 Bolivar Road, Middletown (this property has never been surveyed), which produces milk, ice cream, and butter, and Rocky Point Creamery, located at 4323A Tuscarora Road, Tuscarora (MIHP # F-1-155), which sells ice cream, cheese, and milk.¹⁷⁶

¹⁷⁵ Kate Masters and Allen Etzler, “As Dairy Farms Continue to Struggle, the Next Generation Readies to Take on Challenges,” *The Frederick News-Post*, September 22, 2019.

¹⁷⁶ “Frederick County’s On-the-Farm Ice Cream,” Homegrown Frederick, 2022, <https://www.homegrownfrederick.com/creameries>.

Despite the dramatic decline in the number of dairy farms in Frederick County, overall, it is still largely an agricultural county, despite increased population growth.¹⁷⁷ In 2017, the last year the agricultural census was taken, there were 1,373 farms in Frederick County, covering 188,576 acres of land—44% of the total land in the county. Frederick County’s agricultural products had a total market value of \$131,583,000—with crop sales accounting for 48% of the total (\$63,556,000), and livestock sales representing the remaining 52% (\$68,026,000). These agricultural products sold in Frederick County account for 5% of the state agricultural sales. The milk produced in Frederick County was valued at \$45,135,000—making Frederick County the second highest milk producing county in the State of Maryland (out of a total of 18 milk producing counties).¹⁷⁸ The sale of milk, and the dairy industry overall, is still an important part of Frederick County’s agricultural economy—with 34% of the total market value of agricultural products sold from milk sales.

¹⁷⁷ Nancy Lavin, “Census: Frederick County outpaced other Maryland Counties in Population Growth,” *The Frederick News-Post*, March 23, 2018.

¹⁷⁸ United States Department of Agriculture, “2017 Census of Agriculture County Profile: Frederick County, Maryland,” https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Maryland/cp24021.pdf