# EXPERT REPORT

BY

BILLY R. CLAY MS, DVM, DABVT

FOR
The Defendants in the:

STATE OF OKLAHOMA, ex rel, W. A. DREW EDMONDSON, in his capacity as ATTORNEY GENERAL OF THE STATE OF OKLAHOMA, and OKLAHOMA SECRETARY OF THE ENVIRONMENT C. MILES TOLBERT, in his capacity as the TRUSTEE FOR NATURAL RESOURCES FOR THE STATE OF OKLAHOMA,

Plaintiff

VS.

TYSON FOODS, INC., TYSON POULTRY, INC., TYSON CHICKEN, INC., COBB-VANTRESS, INC., CAL-MAINE FOODS, INC. CAL-MAINE FARMS, INC., CARGILL, INC., CARGILL TURKEY PRODUCTION, LLC, GEORGE'S, INC., GEORGE'S FARMS, INC., PETERSON FARMS, INC., SIMMONS FOODS, INC. AND WILLOWBROOK FOODS, INC.,

Defendants

CASE NO. 05-CV-0329 GKF-SAJ.
IN THE U.S. DISTRICT COURT, NORTHERN DISTRICT OF OKLAHOMA

November 29, 2008

Billy R. Clay MS, DVM, DABVT

PLAINTIFF'S EXHIBIT
1

## II. OPINIONS

1. Poultry litter like other livestock manures and associated beddings has a long history of safe usage as an important source of fertilizer for human food production.

2. There are a variety of benefits associated with the use of poultry litter fertilizer and its application is highly regulated in the IRW.

3. Approximately 65 % of the land area of the IRW is devoted to farming (agricultural production).

4. Poultry production is one of seven primary farming enterprises that exist in the IRW.

5. Cattle production makes use of most of the land area devoted to farming enterprises. About 75 % of the farms produce beef cattle.

6. Fertilization of pastures and crops within the IRW is dependent upon availability and cost effectiveness of organic (animal manures) and inorganic fertilizer materials.

7. There are numerous sources of animal and human fecal material and its associated bacteria in this watershed.

8. Cattle spend nearly half the time in and near riparian areas while wildlife spend even more time there. The streams serve as the water supply for some of the livestock and most of the wildlife adding to stream-bank erosion and direct deposition of fecal material.

9. Cattle wet manure **production** in the IRW represents about 61 % of the total animal manure while poultry is about 25 % of the total. Cattle manure is deposited directly to the land surface while poultry manure is deposited on an organic matrix in the poultry house and is allowed to undergo drying and fermentation before it is available for land application as fertilizer or export.

10. Fecal bacteria are present in wet (hydrated) manure but die as they are exposed to drying and sunlight.

11. Poultry litter, swine lagoon contents and composted dairy cattle manure contains less dry weight and fecal indicator bacteria than fresh manure. After fermentation and drying poultry manure as litter represents approximately 11 percent of the total produced while cattle manure represents about 77 percent. Fecal *coliform* bacteria content in poultry litter manure is reduced to about 6 percent of the total at the time of harvest while cattle production represents about 90 percent of the total produced at that point.

12. Cattle, horses and wildlife concentrate manure within or near the riparian areas and some manure is deposited directly into streams.

13. Poultry litter produced in the IRW annually has been estimated within a range of 231,000 to 354,000 tons. A middle (near average) estimate is about 295,000 tons.

14. At least 70,000 tons of poultry litter is currently exported annually from the IRW, 23,600 tons are carried over to the next production cycle and 18,000 tons are stored before usage.

15. Of the phosphorus (P) in livestock and wildlife manure produced in the IRW, cattle contribute about 46 percent of the total that is directly deposited on the fields and in the riparian areas while poultry litter available for application represents about 35 percent of that total and it is not applied to the riparian areas.

16. Laws and regulations are in place to govern poultry litter usage as fertilizer. The state has produced no evidence that cattle producers in the IRW have violated the laws and regulations pertaining to the application of poultry litter.

17. There are more than 11,000 property owners in the IRW with 5 acres, or more, but only about 4,500 identify themselves as being engaged in farming. The remaining 6,500 non-farmers have little regulatory oversight relative to the way they manage their properties. Only 1,580 per year have submitted soil samples for assay over the past three years.

18. Confinement poultry businesses are highly regulated by the EPA, FDA and USDA with additional state oversight. For EPA purposes they are identified as AFOs (animal feeding operations) or CAFO's (confined animal feeding operations).

19. There is no evidence that because of the use of antibiotics in poultry production there are concomitantly resistant pathogenic bacteria in the waters of the IRW.

20. The presence of steroid hormones in surface waters in the IRW in parts per billion or trillion concentrations does not suggest that poultry are the source. Hormones are not used as growth promotants in poultry production and all animals, birds, and humans produce and excrete hormones.

| | Wet Manure Produced | | Fecal *Coliform* X $10^{10}$ cfu/100ml | |
|---|---|---|---|---|
| | % | Tons | % | No. |
| Beef Cattle | 56.10 | 1,870,847 | 80.06 | 838,655,521 |
| Poultry | 25.18 | 839,773 | 10.62 | 111,263,259 |
| Swine | 10.87 | 362,331 | 6.59 | 69,011,557 |
| Milk Cows | 4.63 | 154,296 | 2.47 | 25,835,666 |
| Horses and Ponies | 2.52 | 83,892 | 0.01 | 138,175 |
| Whitetail Deer | 0.64 | 21,421 | 0.05 | 535,528 |
| Sheep and Lambs | 0.04 | 1,409 | 0.13 | 1,408,694 |
| Wild Turkeys | 0.01 | 459 | 0.001 | 12,098 |
| Geese | 0.001 | 24 | 0.060 | 629,790 |
| Ducks | 0.001 | 18 | 0.004 | 40,800 |

Poultry, swine and some of dairy cattle manure is allowed to undergo fermentation (composting) and/or drying before it is applied to land (Ag Waste Management Handbook). Those processes alter the bacterial populations and weight for each. In the case of poultry, the manure is dried from 75 percent moisture to about 25 percent and some fermentation takes place as the litter is layered in the houses after each flock (Kelley 1994, Lu 2003 and Lovanh 2007). Likewise, litter with manure that is stored may undergo additional fermentation due to composting (Jeffrey 2001). Dairy manure produced near the milk barn is stacked where composting takes place. Swine manure in lagoons undergoes aerobic and anaerobic fermentation. Some of these manures are applied to the IRW at various times during the year (poultry-after de-caking in some cases and at total clean-out of the house, swine-pump out of lagoons one to two times per year and dairy cattle-two to three times per year).

The relative percentages of "wet manure" and *fecal coliforms* that are **deposited or available for application** would therefore be adjusted accordingly (Table A-A, Appendix A):

| | Wet Manure Deposited or Available for Application | | *Fecal Coliforms* Deposited or Available for Application | |
|---|---|---|---|---|
| | % | Tons | % | No.X $10^{10}$ cfu/100ml |
| Beef Cattle | 72.41 | 1,870,847 | 87.99 | 838,655,521 |
| Poultry* | 11.42 | 295,114 | 5.84 | 55,631,629 |
| Swine* | 7.01 | 181,155 | 3.62 | 34,505,778 |
| Milk Cows* | 5.01 | 129,347 | 2.26 | 21,572,782 |
| Horses | 3.25 | 83,892 | 0.01 | 138,175 |
| Whitetail Deer | 0.83 | 21,421 | 0.06 | 535,528 |
| Sheep and Lambs | 0.05 | 1,409 | 0.15 | 1,408,694 |
| Wild Turkeys | 0.02 | 459 | 0.00 | 12,098 |
| Geese and Ducks | 0.00 | 43 | 0.07 | 670,580 |

*Some, or all, available for manual application as fertilizer. Poultry manure is shown as litter (24 % moisture for broiler, 34 % for turkey and 50 % for layers.)

Plaintiff's consultants Engel, Alexander and Smith have calculated what they call a mass balance for phosphorus (P) in the IRW. In their estimates they focus on manure and other sources of P produced with the implication that all phosphorus produced winds up in the IRW with ultimate direct access to the streams and/or lakes. They do not account for livestock products sold other than beef calves. Likewise, they do not account for all crops or produce sold.

Their "mass balance" does not determine the fate and transport of P within the watershed. Because cattle, horses and wildlife have direct access to streams and/or riparian areas, the distribution of manure for those species tends to be more concentrated near the stream's edge or in the streams thus influencing the fate and transport of P in the IRW (OCC 1999). Poultry manure is applied outside the riparian areas. Estimates for cattle, horses and wildlife were based on estimates of sub- watersheds used by the Oklahoma Conservation Commission and other sources. Seventy-nine percent of the beef cattle and horses and 37 percent of the dairy cattle have access to the riparian areas (illustrated in Appendix K). The estimated manure that is deposited directly in the streams or in the riparian areas is shown in Appendix F. Approximately 28,800 tons of manure is deposited directly in the streams annually with an additional 975,000 tons deposited in the riparian areas (mostly from cattle). Approximately 40 percent of the manure and *fecal coliforms* produced by grazing animals and wildlife is deposited within the riparian areas. Livestock and wildlife also contribute to the erosion of the stream banks and riparian areas further influencing the transport of P along with other nutrients and bacteria into streams.

Engel has estimated that cattle contribute 6 percent of the total phosphorus entering the water bodies. He made those calculations through identification of pastures with GIS and using pasture sizes from ODAFF records. His estimates of total cattle using 2002 census data are similar to that calculated by Clay but he assumes only 55% of cattle have access to streams (Clay estimate is 79 %). However pasture size from ODAFF represents pastures that required a nutrient management plan for poultry litter application, typically 20 to 30 acres in size. Not all pastures have an annual measurement. For the years of 2005 through 2007 there was an average annual testing of 618 pastures in Oklahoma and 962 in Arkansas but there are nearly 3,500 cattle farms with multiple pastures for each farm. Likewise, the 585,000 acres of beef cattle farms includes at least 74,000 acres of woodland pasture which would not show up in the GIS survey as open area. In Appendix K the dendritic drainage pattern illustrating 1$^{st}$ and 2$^{nd}$ order streams within the IRW shows that there are few tracts of 160 acres, or greater that do not have a stream with its riparian area. Many of those would have 3$^{rd}$ order tributaries, mostly ephemeral, but cattle manure deposited there is more accessible for rainfall runoff into the perennial streams. Likewise it is important to note that cattle in these pastures tend to reside there year around offering long-term accumulative capacity. Regardless of where the phosphorus comes from originally, cattle tend to transport it toward the streams due to their tendency to loaf in shaded areas and or near water. Of the livestock and wildlife present in the

reveals that litter potentially available for application in the IRW is about 295,000 tons (Table A-A, Appendix A). If that is adjusted for a confirmed amount of litter exported annually (Herron 2007 and 2008) the final amount available for application, carry-over or storage is about 225,000 tons. Using information obtained from Fisk 2004-2008 the amount of litter carried over into the 2nd year before a complete clean-out is estimated to be 8.0 percent (23,600 tons). The amount stored is estimated at 6.1 percent (18,000 tons). The annual litter production, carry-over, stored and export estimates are summarized below in tons:

| | |
|---|---|
| Engel/Fisher | 354, 000 |
| Storm | 231,000 |
| Herron/Clay | 307,700 |
| NRAES-132/Clay | 312,033 |
| Clay 2002 Census | 295,114 |
| | |
| Carry-over | 23,600 |
| Stored | 18,000 |
| BMPs Export | 70,000 |

From the perspective of manure **nutrients available for deposit or potential application to agricultural land**, the 2002 census data was used for calculations and is shown below in tons:

| | Dry Mass | % | Nitrogen | Phosphorus[1] | Potassium |
|---|---|---|---|---|---|
| Beef Cattle | 217,018 | 50.1 | 10,967 | 3,337 | 6,774 |
| Poultry (litter) * | 157,423** | 36.4** | 4,808** | 2,411** | 3,024** |
| Hogs and Pigs* | 18,116 | 4.2 | 1,032 | 776 | 1,251 |
| Milk Cows* | 16,168 | 3.7 | 636 | 169 | 520 |
| Horses and Ponies | 18,456 | 4.3 | 494 | 117 | 411 |
| Whitetail Deer | 5,355 | 1.2 | 241 | 38 | 161 |
| Sheep and Lambs | 352 | 0.1 | 15 | 3 | 11 |
| Wild Turkeys | 117 | 0.03 | 6 | 2 | 2 |
| Wild Geese and Ducks | 12 | 0.00 | .5 | .2 | .1 |

*Some, or all, is collected and manually applied. Poultry manure is applied as litter minus that exported but all other numbers represent manure.

**Based on Clay estimates but a range of values exist for each.

[1]Where phosphorus is used in this report it does not refer to elemental P in practical application. In soil, plant and animal life processes P exists in various oxygenated forms as in phosphate or orthophosphate.

Nutrient source of fertilizer for each of the farming enterprises is different. Wherever possible cattle enterprises use animal manures and/or supplement it with commercial inorganic fertilizer (Appendix E). Until recent years they were advised by their respective State Cooperative Extension Service to use animal manures based on nitrogen (N) content in that most soils have a large capacity to store the less mobile nutrients (P and K). As prevailing concern developed

- ITAR Energy Corporation: Board of Directors and Treasurer (Mineral Holdings)
- Cimarron Valley Energy Corporation: Past Chairman, Board of Directors (Oil/Gas Production)
- American Agricultural Marketing Corporation: Past Chairman, Board of Directors (Agricultural Product Export)
- Hideaway 2 Inc.: Past Chairman, Board of Directors (Retail Pizza Chain)
- Pardalis, Inc.: Member, Board of Directors and consultant (Digital information management)
- Coastal Hydrogen, Inc.: Member, Board of Directors (Experimental production of hydrogen)
- Consultant for law firms, insurance companies, industrial firms, animal and land owners, etc. concerning property damages or losses

**Publications and Presentations**

Numerous articles, reports and publications have been authored but most are proprietary in nature.

Presentations have been delivered for a variety of audiences with professional continuing education as the typical format.

## VII. COURT CASES WITHIN THE PAST FOUR YEARS IN WHICH TESTIMIONY OR DEPOSITIONS WERE GIVEN

Cecil Dougherty and Pete Glasscock v. LeMaster Livestock, Inc. and Eastern Livestock Co., LLC In US district Court Northern District of TX, Amarillo Division. CA No. 2-0-5CV-023J.

Clifford Simmons and Sharon Simmons v. TEPPCO Crude Pipeline, L.P. Case No. CJ-03-251. In Dist. Ct. of Caddo County, OK.

Mary E. Green, et al. v. Alpharma, Inc., et al. Case No. CV-2003-2150-2. In the Circuit Court of Washington County, Arkansas.

Billy Ray Mainer et al. v. Fairfax Elevator Co. et al. Circuit Court of Franklin County AR. Case No. CV-2005-22-1.

Wordprotemps, Inc v. Post Petroleum Company et al. Case No. CV-06-152. In the District Court of McClain County State of Oklahoma.

Wyatt v. C-P Integrated Services, Inc. CJ-2004-399. In the District Court of McClain County State of Oklahoma.

DKMT Company v. Cimarron Transportation, LLC. CV-06-261, CJ-06-575. In the District Court of McClain County State of Oklahoma.

# Appendix A

## Summaries of All Animal Populations, Manure Production and its Components and the Effects of Direct Deposit and Indirect Application of Manure or Litter in the Illinois River Watershed (IRW) Using Zip Code Calculations.

Table A-A , Summary of animal classes in IRW study area showing their numbers and their contribution to wet manure, its components, and fecal coliform. Values have then been adjusted for natural composting based on stockpiling of manure through piles (dairy), lagoons (swine), and in-house composting (poultry) indicating the adjustment factors. (Source: Refer to Notes in Appendix G)

and

Table A-B Summary of study area as presented in Appendix B. Based on 2002 Census of Agriculture Data Zip Code Data.

and

Table A-D Summary of study area livestock numbers and their manure production as presented in Appendix D.

and

Table A-E , Summary of animal class manure production in IRW study area showing their numbers and their contribution to wet manure and fecal coliform, their rank and percentage of wet manure and fecal coliform. (Source: Refer to Appendix C.).

# Graphs in A

## Summaries of All Animal Populations, Manure Production and its Components and the Effects of Direct Deposit and Indirect Application of Manure in IRW Using Zip Code Calculations

Related to Table A-A ,

Tons of manure deposited and/or available for application to land in IRW

Tons of nitrogen in manure deposited and/or available for application to land in IRW

Tons of Phosporous in manure deposited and/or available for application to land in IRW

Fecal coliform in manure deposited and/or available for application to land in IRW, x $10^{10}$ cfu

Percent of poultry litter produced in the IRW that is reported as exported and that available for application, Clay calculations

Summary of total tons of manure deposited and/or available for application to land in the IRW comparing all other with poultry

and

Related to Table A-E,

Fecal coliform Production in IRW using 2002 Census Data and Other Sources (Source: Refer to Appendix C.)

Wet Manure Production in IRW using 2002 Census Data and Other Sources (Source: Refer to Appendix C.)

Wet Tons of Manure Produced in the IRW Comparing Poultry with All Other Production

Wet Tons of Manure Produced in the IRW using 2002 Census Data with USDA and Other Production Tables

**Table A-A , Summary of animal classes in IRW study area showing their numbers and their contribution to wet manure, its components, and fecal coliform. Values have then been adjusted for composting based on stockpiling of manure through piles (dairy), lagoons (swine), and in-house composting (poultry) indicating the adjustment factors. (Refer to Notes in Appendix G for Sources)**

| Quantities before adjustments are made | Arkansas Total | Oklahoma Total | Study Area Total | Direct or Indirect Deposit/Composting: Method of Deposit/Harvest Direct | Indirect | Delay Factor | Quantities adjusted for Indirect Deposit/Composting: Wet Manure Tons | N Dry Lbs | P Dry Lbs | K Dry Lbs | Total coliform | Fecal coliform | Fecal Strepcoccus | Percent Reduction |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Farms by size , All farms | 2,832 | 1,650 | 4,482 | | | | | | | | | | | |
| Percent of county farms in Zip code area | 54.71% | 32.99% | | | | | | | | | | | | |
| Land in farms, acres | 372,078 | 326,448 | 698,525 | | | | | | | | | | | |
| Cattle and calves inventroy, number | 122,503 | 77,082 | 199,585 | | | | | | | | | | | |
| Beef cow inventory, number | 65,058 | 38,678 | 103,737 | 100.00% | 0.00% | | | | | | | | | 0.00% |
| Wet Manure Weight, Tons | 750,010 | 445,892 | 1,195,902 | | | | 1,195,902 | | | | | | | 0.00% |
| N, DRY LBS | 8,793,223 | 5,227,695 | 14,020,918 | | | | | 14,020,918 | | | | | | 0.00% |
| P, DRY LBS | 2,379,343 | 2,152,662 | 4,532,005 | | | | | | 4,532,005 | | | | | 0.00% |
| K, DRY LBS | 5,431,108 | 3,228,870 | 8,659,979 | | | | | | | 8,659,979 | | | | 0.00% |
| Total coliform, x10^9 cfu | 750,010,219 | 445,891,617 | 1,195,901,836 | | | 0.00% | | | | | 1,195,901,836 | | | 0.00% |
| Fecal coliform, x10^9 cfu | 336,211,478 | 199,882,449 | 536,093,927 | | | 0.00% | | | | | | 536,093,927 | | 0.00% |
| Fecal streptococcus, x10^9 cfu | 362,073,899 | 215,258,022 | 577,331,921 | | | 0.00% | | | | | | | 577,331,921 | 0.00% |
| Milk cow inventory, number | 3,411 | 7,418 | 10,829 | 67.00% | 33.00% | Note 1 | | | | | | | | 16.17% |
| Wet Manure Weight, Tons | 48,604 | 105,692 | 154,296 | | | 16.17% | 129,347 | | | | | | | 21.25% |
| N, DRY LBS | 508,645 | 1,106,084 | 1,614,729 | | | 21.25% | | 1,271,567 | | | | | | 0.00% |
| P, DRY LBS | 106,250 | 231,049 | 337,299 | | | 0.00% | | | 337,299 | | | | | 0.00% |
| K, DRY LBS | 327,794 | 712,810 | 1,040,603 | | | 0.00% | | | | 1,040,603 | | | | 16.50% |
| Total coliform, x10^9 cfu | 565,161,369 | 1,228,982,137 | 1,794,143,506 | | | 16.50% | | | | | 1,498,109,828 | | | 16.50% |
| Fecal coliform, x10^9 cfu | 8,138,324 | 17,697,343 | 25,835,666 | | | 16.50% | | | | | | 21,572,782 | | 16.50% |
| Fecal streptococcus, x10^9 cfu | 47,473,555 | 103,234,499 | 150,708,055 | | | 16.50% | | | | | | | 125,841,226 | 16.50% |
| Other Cattle and Calves inventory, number | 54,033 | 30,986 | 85,019 | 100.00% | 0.00% | | | | | | | | | 0.00% |
| Wet Manure Weight, Tons | 428,956 | 245,990 | 674,945 | | | | 674,945 | | | | | | | 0.00% |
| N, DRY LBS | 5,029,134 | 2,884,016 | 7,913,149 | | | | | 7,913,149 | | | | | | 0.00% |
| P, DRY LBS | 1,360,824 | 780,381 | 2,141,205 | | | | | | 2,141,205 | | | | | 0.00% |
| K, DRY LBS | 3,106,230 | 1,781,304 | 4,887,533 | | | | | | | 4,887,533 | | | | 0.00% |
| Total coliform, x10^9 cfu | 428,955,532 | 245,989,564 | 674,945,095 | | | 0.00% | | | | | 674,945,095 | | | 0.00% |
| Fecal coliform, x10^9 cfu | 192,290,411 | 110,271,184 | 302,561,594 | | | 0.00% | | | | | | 302,561,594 | | 0.00% |
| Fecal streptococcus, x10^9 cfu | 207,081,981 | 118,753,582 | 325,835,563 | | | 0.00% | | | | | | | 325,835,563 | 0.00% |
| Hogs and pigs inventory, number | 21,784 | 362 | 22,146 | 0.00% | 100.00% | Note 2 | | | | | | | | 50.00% |
| Wet Manure Weight, Tons | 90,655 | 1,508 | 92,164 | | | 50.00% | 46,082 | | | | | | | 54.00% |
| N, DRY LBS | 1,122,401 | 18,676 | 1,141,076 | | | 54.00% | | 524,895 | | | | | | 0.00% |
| P, DRY LBS | 388,523 | 6,465 | 394,988 | | | 0.00% | | | 394,988 | | | | | 0.00% |
| K, DRY LBS | 625,954 | 10,415 | 636,369 | | | 0.00% | | | | 636,369 | | | | 50.00% |
| Total coliform, x10^9 cfu | 45,327,719 | 754,206 | 46,081,926 | | | 50.00% | | | | | 23,040,963 | | | 50.00% |
| Fecal coliform, x10^9 cfu | 17,267,703 | 287,317 | 17,555,019 | | | 50.00% | | | | | | 8,777,510 | | 50.00% |
| Fecal streptococcus, x10^9 cfu | 518,031,076 | 8,619,502 | 526,650,578 | | | 50.00% | | | | | | | 263,325,289 | 50.00% |
| Hogs and pigs other inventory, number | 57,922 | 85,907 | 143,830 | 0.00% | 100.00% | Note 2 | | | | | | | | 50.00% |
| Wet Manure Weight, Tons | 108,792 | 161,355 | 270,147 | | | 50.00% | 135,073 | | | | | | | 54.00% |
| N, DRY LBS | 1,346,948 | 1,997,727 | 3,344,675 | | | 54.00% | | 1,538,550 | | | | | | 0.00% |
| P, DRY LBS | 466,251 | 691,521 | 1,157,772 | | | 0.00% | | | 1,157,772 | | | | | 0.00% |
| K, DRY LBS | 751,182 | 1,114,117 | 1,865,299 | | | 0.00% | | | | 1,865,299 | | | | 50.00% |
| Total coliform, x10^9 cfu | 54,395,972 | 80,677,439 | 135,073,411 | | | 50.00% | | | | | 67,536,706 | | | 50.00% |
| Fecal coliform, x10^9 cfu | 20,722,275 | 30,734,263 | 51,456,538 | | | 50.00% | | | | | | 25,728,269 | | 50.00% |
| Fecal streptococcus, x10^9 cfu | 621,668,249 | 922,027,879 | 1,543,696,128 | | | 50.00% | | | | | | | 771,848,064 | 50.00% |
| Sheep and lambs inventory, number | 1,281 | 648 | 1,930 | 100.00% | 0.00% | | | | | | | | | 0.00% |
| Wet Manure Weight, Tons | 935 | 473 | 1,409 | | | | 1,409 | | | | | | | 0.00% |
| N, DRY LBS | 19,641 | 9,941 | 29,583 | | | | | 29,583 | | | | | | 0.00% |
| P, DRY LBS | 4,069 | 2,059 | 6,128 | | | | | | 6,128 | | | | | 0.00% |
| K, DRY LBS | 14,965 | 7,574 | 22,539 | | | | | | | 22,539 | | | | 0.00% |
| Total coliform, x10^9 cfu | 420,884 | 213,029 | 633,912 | | | 0.00% | | | | | 633,912 | | | 0.00% |
| Fecal coliform, x10^9 cfu | 935,297 | 473,397 | 1,408,694 | | | 0.00% | | | | | | 1,408,694 | | 0.00% |
| Fecal streptococcus, x10^9 cfu | 1,309,416 | 662,756 | 1,972,172 | | | 0.00% | | | | | | | 1,972,172 | 0.00% |
| Horses and ponies of all ages inventory, number | 4,707 | 3,487 | 8,194 | 100.00% | 0.00% | | | | | | | | | 0.00% |
| Wet Manure Weight, Tons | 48,188 | 35,704 | 83,892 | | | | 83,892 | | | | | | | 0.00% |
| N, DRY LBS | 566,916 | 420,047 | 986,963 | | | | | 986,963 | | | | | | 0.00% |
| P, DRY LBS | 134,170 | 99,411 | 233,581 | | | | | | 233,581 | | | | | 0.00% |
| K, DRY LBS | 472,430 | 350,039 | 822,470 | | | | | | | 822,470 | | | | 0.00% |
| Total coliform, x10^9 cfu | 415,738,679 | 308,034,526 | 723,773,205 | | | 0.00% | | | | | 723,773,205 | | | 0.00% |
| Fecal coliform, x10^9 cfu | 79,368 | 58,807 | 138,175 | | | 0.00% | | | | | | 138,175 | | 0.00% |
| Fecal streptococcus, x10^9 cfu | 49,132,753 | 36,404,080 | 85,536,833 | | | 0.00% | | | | | | | 85,536,833 | 0.00% |
| **TOTAL UNITS, NONPOULTRY, DOMESTIC LIVESTOCK** | | | | | | | **TOTAL UNITS, NONPOULTRY, DOMESTIC LIVESTOCK** | | | | | | | |
| Wet Manure Weight, Tons | 1,476,140 | 996,614 | 2,472,755 | | | | 2,266,649 | | | | | | | 8.34% |
| N, DRY LBS | 17,386,908 | 11,664,185 | 29,051,094 | | | | | 26,285,626 | | | | | | 9.52% |
| P, DRY LBS | 4,839,431 | 3,963,548 | 8,802,979 | | | | | | 8,802,979 | | | | | 0.00% |
| K, DRY LBS | 10,729,664 | 7,205,130 | 17,934,793 | | | | | | | 17,934,793 | | | | 0.00% |
| Total coliform, x10^9 cfu | 2,260,010,374 | 2,310,542,518 | 4,570,552,892 | | | | | | | | 4,183,941,545 | | | 8.46% |
| Fecal coliform, x10^9 cfu | 575,644,855 | 359,404,759 | 935,049,614 | | | | | | | | | 896,280,950 | | 4.15% |
| Fecal streptococcus, x10^9 cfu | 1,806,770,928 | 1,404,960,321 | 3,211,731,249 | | | | | | | | | | 2,151,691,068 | 33.01% |

Table A-A , Summary of animal classes in IRW study area showing their numbers and their contribution to wet manure, its components, and fecal coliform. Values have then been adjusted for composting based on stockpiling of manure through piles (dairy), lagoons (swine), and in-house composting (poultry) indicating the adjustment factors. (Refer to Notes in Appendix G for Sources)

| Quantities before adjustment are made | Arkansas Total | Oklahoma Total | Study Area Total | Direct or Indirect Deposit/Composting: Method of Deposit/Harvest Direct | indirect | Delay Factor | Quantities adjusted for Indirect Deposit/Composting: Wet Manure Tons | N Dry Lbs | P Dry Lbs | K Dry Lbs | Total coliform | Fecal coliform | Fecal Strepcoccus | Percent Reduction |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Farms by size , All farms | 120,680 | 200,637 | 321,317 | | | | | | | | | | | |
| Percent of county farms in zip code area | 0.00% | 0.00% | | | | | | | | | | | | |
| Land in farms, acres | 201,133 | 334,395 | 535,528 | | | | | | | | | | | |
| Cattle and calves inventroy, number | 0 | 0 | 0 | | | | | | | | | | | |
| Whitetail Deer population | 11,077 | 18,323 | 29,400 | 100.00% | 0.00% | | | | | | | | | |
| Wet Manure Weight, Ton: | 8,045 | 13,376 | 21,421 | | | | 21,421 | | | | | | | 0.00% |
| N, DRY LBS | 181,020 | 300,955 | 481,975 | | | | | 481,975 | | | | | | 0.00% |
| P, DRY LBS | 28,159 | 46,815 | 74,974 | | | | | | 74,974 | | | | | 0.00% |
| K, DRY LBS | 120,680 | 200,637 | 321,317 | | | | | | | 321,317 | | | | 0.00% |
| Total coliform, x1$0^{10}$ cfu | 0 | 0 | 0 | | | 0.00% | | | | | 0 | | | 0.00% |
| Fecal coliform, x1$0^{10}$ cfu | 201,133 | 334,395 | 535,528 | | | 0.00% | | | | | | 535,528 | | 0.00% |
| Fecal streptococcus, x1$0^{10}$ cfu | 0 | 0 | 0 | | | 0.00% | | | | | | | 0 | 0.00% |
| Wild Turkey population | 1,762 | 1,802 | 3,564 | 100.00% | 0.00% | | | | | | | | | |
| Wet Manure Weight, Ton: | 227 | 232 | 459 | | | | 459 | | | | | | | 0.00% |
| N, DRY LBS | 5,981 | 6,117 | 12,098 | | | | | 12,098 | | | | | | 0.00% |
| P, DRY LBS | 2,219 | 2,269 | 4,488 | | | | | | 4,488 | | | | | 0.00% |
| K, DRY LBS | 2,315 | 2,368 | 4,683 | | | | | | | 4,683 | | | | 0.00% |
| Total coliform, x1$0^{10}$ cfu | 0 | 0 | 0 | | | 0.00% | | | | | 0 | | | 0.00% |
| Fecal coliform, x1$0^{10}$ cfu | 5,981 | 6,117 | 12,098 | | | 0.00% | | | | | | 12,098 | | 0.00% |
| Fecal streptococcus, x1$0^{10}$ cfu | 0 | 0 | 0 | | | 0.00% | | | | | | | 0 | 0.00% |
| Geese population, goose days in study area | 68,434 | 60,066 | 128,500 | 100.00% | 0.00% | | | | | | | | | |
| Wet Manure Weight, Ton: | 13 | 11 | 24 | | | | 24 | | | | | | | 0.00% |
| N, DRY LBS | 209 | 183 | 392 | | | | | 392 | | | | | | 0.00% |
| P, DRY LBS | 79 | 69 | 148 | | | | | | 148 | | | | | 0.00% |
| K, DRY LBS | 0 | 0 | 0 | | | | | | | 0 | | | | 0.00% |
| Total coliform, x1$0^{10}$ cfu | 0 | 0 | 0 | | | 0.00% | | | | | 0 | | | 0.00% |
| Fecal coliform, x1$0^{10}$ cfu | 335,327 | 294,464 | 629,790 | | | 0.00% | | | | | | 629,790 | | 0.00% |
| Fecal streptococcus, x1$0^{10}$ cfu | 0 | 0 | 0 | | | 0.00% | | | | | | | 0 | 0.00% |
| Duck population, duck days in study area | 55,015 | 112,886 | 167,900 | 100.00% | 0.00% | | | | | | | | | |
| Wet Manure Weight, Ton: | 6 | 12 | 18 | | | | 18 | | | | | | | 0.00% |
| N, DRY LBS | 165 | 339 | 504 | | | | | 504 | | | | | | 0.00% |
| P, DRY LBS | 59 | 122 | 181 | | | | | | 181 | | | | | 0.00% |
| K, DRY LBS | 78 | 160 | 238 | | | | | | | 238 | | | | 0.00% |
| Total coliform, x1$0^{10}$ cfu | 0 | 0 | 0 | | | 0.00% | | | | | 0 | | | 0.00% |
| Fecal coliform, x1$0^{10}$ cfu | 13,369 | 27,431 | 40,800 | | | 0.00% | | | | | | 40,800 | | 0.00% |
| Fecal streptococcus, x1$0^{10}$ cfu | 29,708 | 60,958 | 90,666 | | | 0.00% | | | | | | | 90,666 | 0.00% |
| **TOTAL UNITS,NONPOULTRY, WILDLIFE** | | | | | | | **TOTAL UNITS,NONPOULTRY, WILDLIFE** | | | | | | | |
| Wet Manure Weight, Ton: | 8,291 | 13,631 | 21,922 | | | | 21,922 | | | | | | | 0.00% |
| N, DRY LBS | 187,375 | 307,594 | 494,969 | | | | | 494,969 | | | | | | 0.00% |
| P, DRY LBS | 30,516 | 49,275 | 79,791 | | | | | | 79,791 | | | | | 0.00% |
| K, DRY LBS | 123,073 | 203,165 | 326,238 | | | | | | | 326,238 | | | | 0.00% |
| Total coliform, x1$0^{10}$ cfu | 0 | 0 | 0 | | | | | | | | 0 | | | 0.00% |
| Fecal coliform, x1$0^{10}$ cfu | 555,809 | 662,406 | 1,218,216 | | | | | | | | | 1,218,216 | | 0.00% |
| Fecal streptococcus, x1$0^{10}$ cfu | 29,708 | 60,958 | 90,666 | | | | | | | | | | 90,666 | 0.00% |
| Layers 20 weeks old and older inventory, number | 1,982,754 | 486,284 | 2,469,038 | 0.00% | 100.00% | Note 3 | | | | | | | | |
| Wet Manure Weight, Ton: | 90,858 | 22,283 | 113,141 | | | 20.50% | 89,947 | | | | | | | 20.50% |
| N, LBS | 2,385,016 | 584,941 | 2,969,957 | | | 66.00% | | 1,009,785 | | | | | | 66.00% |
| P, LBS | 851,791 | 208,908 | 1,060,699 | | | 0.00% | | | 1,060,699 | | | | | 0.00% |
| K, LBS | 851,791 | 208,908 | 1,060,699 | | | 0.00% | | | | 1,060,699 | | | | 0.00% |
| Total coliform, x1$0^{10}$ cfu | 141,965,217 | 34,817,929 | 176,783,146 | | | 50.00% | | | | | 88,391,573 | | | 50.00% |
| Fecal coliform, x1$0^{10}$ cfu | 9,653,635 | 2,367,619 | 12,021,254 | | | 50.00% | | | | | | 6,010,627 | | 50.00% |
| Fecal streptococcus, x1$0^{10}$ cfu | 21,010,852 | 5,153,053 | 26,163,906 | | | 50.00% | | | | | | | 13,081,953 | 50.00% |
| Broilers and other meat type chickens sold, numbe | 131,887,311 | 15,634,958 | 147,522,269 | 0.00% | 100.00% | Note 3 | | | | | | | | |
| Wet Manure Weight, Ton: | 617,974 | 73,260 | 691,234 | | | 31.25% | 475,223 | | | | | | | 31.25% |
| N, LBS | 15,994,634 | 1,896,130 | 17,890,763 | | | 38.00% | | 11,092,273 | | | | | | 38.00% |
| P, LBS | 4,362,173 | 517,126 | 4,879,299 | | | 0.00% | | | 4,879,299 | | | | | 0.00% |
| K, LBS | 5,816,230 | 689,502 | 6,505,732 | | | 0.00% | | | | 6,505,732 | | | | 0.00% |
| Total coliform, x1$0^{10}$ cfu | 0 | 0 | 0 | | | 50.00% | | | | | 0 | | | 0.00% |
| Fecal coliform, x1$0^{10}$ cfu | 87,889,058 | 10,419,059 | 98,308,117 | | | 50.00% | | | | | | 49,154,059 | | 50.00% |
| Fecal streptococcus, x1$0^{10}$ cfu | 0 | 0 | 0 | | | 50.00% | | | | | | | 0 | 0.00% |
| Turkeys sold, number | 512,089 | 157,364 | 669,453 | 0.00% | 100.00% | Note 3 | | | 35261 | | | | | |
| Wet Manure Weight, Ton: | 27,077 | 8,321 | 35,397 | | | 0.40% | 35,256 | | | | | | | 0.40% |
| N, LBS | 714,364 | 219,523 | 933,888 | | | 46.00% | | 504,299 | | | | | | 46.00% |
| P, LBS | 265,006 | 81,436 | 346,442 | | | 0.00% | | | 346,442 | | | | | 0.00% |
| K, LBS | 276,528 | 84,977 | 361,505 | | | 0.00% | | | | 361,505 | | | | 0.00% |
| Total coliform, x1$0^{10}$ cfu | 0 | 0 | 0 | | | 50.00% | | | | | 0 | | | 0.00% |
| Fecal coliform, x1$0^{10}$ cfu | 714,364 | 219,523 | 933,888 | | | 50.00% | | | | | | 466,944 | | 50.00% |
| Fecal streptococcus, x1$0^{10}$ cfu | 0 | 0 | 0 | | | 50.00% | | | | | | | 0 | 0.00% |
| **TOTAL UNITS POULTRY** | | | | | | | **TOTAL UNITS POULTRY** | | | | | | | |
| Wet Manure Weight, Ton: | 735,909 | 103,864 | 839,773 | | | | 600,426 | | | | | | | 28.50% |
| N, DRY LBS | 19,094,013 | 2,700,594 | 21,794,608 | | | | | 12,606,358 | | | | | | 42.16% |
| P, DRY LBS | 5,478,970 | 807,470 | 6,286,440 | | | | | | 6,321,701 | | | | | -0.56% |
| K, DRY LBS | 6,944,550 | 983,386 | 7,927,936 | | | | | | | 7,927,936 | | | | 0.00% |
| Total coliform, x1$0^{10}$ cfu | 141,965,217 | 34,817,929 | 176,783,146 | | | | | | | | 88,391,573 | | | 50.00% |
| Fecal coliform, x1$0^{10}$ cfu | 98,257,057 | 13,006,202 | 111,263,259 | | | | | | | | | 55,631,629 | | 50.00% |
| Fecal streptococcus, x1$0^{10}$ cfu | 21,010,852 | 5,153,053 | 26,163,906 | | | | | | | | | | 13,081,953 | 50.00% |
| **TOTAL FOR POULTRY AND NONPOULTRY** | | | | | | | **TOTAL FOR POULTRY AND NONPOULTRY** | | | | | | | |
| Wet Manure Weight, Tons | 2,220,340 | 621,898 | 3,334,449 | | | | 2,888,998 | | | | | | | 13.36% |
| N, DRY LBS | 36,668,297 | 8,850,210 | 51,340,670 | | | | | 39,386,953 | | | | | | 23.28% |
| P, DRY LBS | 10,348,917 | 2,794,168 | 15,169,210 | | | | | | 15,204,471 | | | | | -0.23% |
| K, DRY LBS | 17,797,287 | 4,817,101 | 26,188,967 | | | | | | | 26,188,967 | | | | 0.00% |
| Total coliform, x1$0^{10}$ cfu | 2,401,975,591 | 2,345,360,447 | 4,747,336,038 | | | | | | | | 4,272,333,118 | | | 10.01% |
| Fecal coliform, x1$0^{10}$ cfu | 674,457,721 | 373,073,367 | 1,047,531,088 | | | | | | | | | 953,130,795 | | 9.01% |
| Fecal streptococcus, x1$0^{10}$ cfu | 1,827,811,488 | 1,410,174,333 | 3,237,985,821 | | | | | | | | | | 2,164,863,687 | 33.14% |

(Refer to Notes in Appendix G for additional detail.

Note 1: On dairy cattle: A 49% reduction factor on the one-third of the manure that is piled outside barn and holding area and 50% reduction for the coliform and streptococcus estimates when applied. There is a 64.4% reduction in nitrogen on the one-third that is applied . There is no change in P-K that is applied.

Note 2: On swine: A 50% reduction factor on manure and coliform and streptococcus estimates because of the use of the lagoon when applied. There is a change in N of 54% reduction while P-K remained the same for what is applied.

Note 3: On poultry: For layers, a 20.5% reduction factor on manure, total coliform, fecal coliform, and fecal streptococcus because layering in house and composting outside of house while N is reduced by 66%. P, K are not reduced. For broilers, a 31.25% reduction factor on manure, 50% reduction factor in coliform and streptococcus estimates because of layering in house and composting outside of house while N is reduced by 38%. P, K are not reduced. For turkeys, a .5% reduction factor on manure, 50% reduction factor in coliform and streptococcus estimates because of layering in house and composting outside of house and N was reduced by 46%. P, K estimates are not reduced.

**Summary of animal classes in IRW study area showing their numbers and their contribution to wet manure, its components, and fecal coliform. Values have then been adjusted for natural composting based on stockpiling of manure through piles (dairy), lagoons (swine), and in-house composting (poultry) indicating the adjustment factors. Shown as actual numbers for the watershed.**

| | Manure, tons | Nitrogen, Lbs | Phosphorous, Lbs | K, Lbs. | Fecal coliform, $x10^{10}$ cfu |
|---|---|---|---|---|---|
| Beef cows and other cattle and calves | 1,870,847 | 21,934,067 | 6,673,210 | 13,547,512 | 838,655,521 |
| Hogs and pigs inventory | 181,155 | 2,063,446 | 1,552,760 | 2,501,669 | 34,505,778 |
| Milk cow inventory | 129,347 | 1,271,567 | 337,299 | 1,040,603 | 21,572,782 |
| Horses and ponies of all ages inventory | 83,892 | 986,963 | 233,581 | 822,470 | 138,175 |
| Whitetail Deer population | 21,421 | 481,975 | 74,974 | 321,317 | 535,528 |
| Sheep and lambs inventory | 1,409 | 29,583 | 6,128 | 22,539 | 1,408,684 |
| Wild Turkey population | 459 | 12,098 | 4,488 | 4,683 | 12,098 |
| Geese and Duck population | 43 | 896 | 329 | 238 | 670,590 |
| Poultry | 600,426 | 12,606,358 | 6,321,701 | 7,927,936 | 55,631,629 |
| Total | 2,888,998 | 39,386,953 | 15,204,471 | 26,188,967 | 953,130,795 |

**Summary of animal classes in IRW study area showing their numbers and their contribution to wet manure, its components, and fecal coliform. Values have then been adjusted for natural composting based on stockpiling of manure through piles (dairy), lagoons (swine), and in-house composting (poultry) indicating the adjustment factors. Shown as percentages for the watershed.**

| | Manure, tons | Nitrogen, Lbs | Phosphorous, Lbs | K, Lbs. | Fecal coliform, $x10^{10}$ cfu |
|---|---|---|---|---|---|
| Beef cows and other cattle and calves | 64.76% | 55.69% | 43.89% | 51.73% | 87.99% |
| Hogs and pigs inventory | 6.27% | 5.24% | 10.21% | 9.55% | 3.62% |
| Milk cow inventory | 4.48% | 3.23% | 2.22% | 3.97% | 2.26% |
| Horses and ponies of all ages inventory | 2.90% | 2.51% | 1.54% | 3.14% | 0.01% |
| Whitetail Deer population | 0.74% | 1.22% | 0.49% | 1.23% | 0.06% |
| Sheep and lambs inventory | 0.05% | 0.08% | 0.04% | 0.09% | 0.15% |
| Wild Turkey population | 0.02% | 0.03% | 0.03% | 0.02% | 0.00% |
| Geese and Duck population | 0.00% | 0.00% | 0.00% | 0.00% | 0.07% |
| Poultry | 20.78% | 32.01% | 41.58% | 30.27% | 5.84% |
| Total | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

**Procedure for converting poultry manure from as produced to litter available for application in IRW**

| (All in Tons) | As Produced | Dry Basis | Reduction from Composting | Add for Litter, Dry Matter | Converted to Litter, Dry Matter | Adjusted to Removal | Less Transported | Net for Application |
|---|---|---|---|---|---|---|---|---|
| Layers 20 weeks old and older inventory, numbe | 113,141 | 28,285 | 5,807 | 0 | 22,478 | 44,957 | | |
| , Broilers and other meat type chickens sold, numbe | 691,234 | 172,809 | 53,864 | 56,163 | 175,107 | 230,404 | | |
| Turkeys sold, number | 35,397 | 8,849 | 34 | [illegible] | [illegible] | [illegible] | | |
| Total | 839,773 | 209,943 | | | 197,551 | 275,309 * | 70,000 | 205,309 |
| | (% Moisture) | | | | | (% Moisture) | | |
| Layers | | 75.00% | 20.53% | 0 | | 50.00% | | |
| Broilers | | 75.00% | 31.17% | 32.50% | | 24.00% | | |
| Turkeys | | 75.00% | 0.39% | -100.00% | | 34.00% | | |

* Poultry litter at removal is estimated to be in the range of 231,000 to 354,000 tons. This range is based on other experts analysis.

**Summary of animal classes in IRW study area showing their numbers and their contribution to wet manure, its components, and fecal coliform. Values have then been adjusted for natural composting based on stockpiling of manure through piles (dairy), lagoons (swine), and in-house composting (poultry) indicating the adjustment factors. Shown as actual numbers and percentages for the watershed. Poultry values expressed as litter.**

| | Actual Numbers | | | | | Percentages | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Manure, tons | Nitrogen, Lbs | Phosphorous, Lbs | K, Lbs. | Fecal coliform, $x10^{10}$ cfu | Manure, tons | Nitrogen, Lbs | Phosphorous, Lbs | K, Lbs. | Fecal coliform, $x10^{10}$ cfu |
| Beef cows and other cattle and calves | 1,870,847 | 21,934,067 | 6,673,210 | 13,547,512 | 838,655,521 | 72.97% | 55.69% | 43.89% | 51.73% | 87.99% |
| Hogs and pigs inventory | 181,155 | 2,063,446 | 1,552,760 | 2,501,669 | 34,505,778 | 7.07% | 5.24% | 10.21% | 9.55% | 3.62% |
| Milk cow inventory | 129,347 | 1,271,567 | 337,299 | 1,040,603 | 21,572,782 | 5.04% | 3.23% | 2.22% | 3.97% | 2.26% |
| Horses and ponies of all ages inventory | 83,892 | 986,963 | 233,581 | 822,470 | 138,175 | 3.27% | 2.51% | 1.54% | 3.14% | 0.01% |
| Whitetail Deer population | 21,421 | 481,975 | 74,974 | 321,317 | 535,528 | 0.84% | 1.22% | 0.49% | 1.23% | 0.06% |
| Sheep and lambs inventory | 1,409 | 29,583 | 6,128 | 22,539 | 1,408,694 | 0.05% | 0.08% | 0.04% | 0.09% | 0.15% |
| Wild Turkey population | 459 | 12,098 | 4,488 | 4,683 | 12,098 | 0.02% | 0.03% | 0.03% | 0.02% | 0.00% |
| Geese and Duck population | 43 | 896 | 329 | 238 | 670,590 | 0.00% | 0.00% | 0.00% | 0.00% | 0.07% |
| Poultry (litter as removed) | 275,309 | 12,606,358 | 6,321,701 | 7,927,936 | 55,631,629 | 10.74% | 32.01% | 41.58% | 30.27% | 5.84% |
| Total | 2,563,881 | 39,386,953 | 15,204,471 | 26,188,967 | 953,130,795 | | | | | |

Poultry litter manure value taken from Appendix C

**Summary of animal classes in IRW study area showing their numbers and their contribution to wet manure, its components, and fecal coliform. Values have then been adjusted for natural composting based on stockpiling of manure through piles (dairy), lagoons (swine), and in-house composting (poultry) indicating the adjustment factors. Shown as actual numbers and percentages for the watershed. Poultry values expressed as litter and net of litter reported exported.**

| | Actual Numbers | | | | | Percentages | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Manure, tons | Nitrogen, Lbs | Phosphorous, Lbs | K, Lbs. | Fecal coliform, $x10^{10}$ cfu | Manure, tons | Nitrogen, Lbs | Phosphorous, Lbs | K, Lbs. | Fecal coliform, $x10^{10}$ cfu |
| Beef cows and other cattle and calves | 1,870,847 | 21,934,067 | 6,673,210 | 13,547,512 | 838,655,521 | 75.02% | 60.62% | 49.08% | 56.04% | 89.32% |
| Hogs and pigs inventory | 181,155 | 2,063,446 | 1,552,760 | 2,501,669 | 34,505,778 | 7.26% | 5.70% | 11.42% | 10.35% | 3.67% |
| Milk cow inventory | 129,347 | 1,271,567 | 337,299 | 1,040,603 | 21,572,782 | 5.19% | 3.51% | 2.48% | 4.30% | 2.30% |
| Horses and ponies of all ages inventory | 83,892 | 986,963 | 233,581 | 822,470 | 138,175 | 3.36% | 2.73% | 1.72% | 3.40% | 0.01% |
| Whitetail Deer population | 21,421 | 481,975 | 74,974 | 321,317 | 535,528 | 0.86% | 1.33% | 0.55% | 1.33% | 0.06% |
| Sheep and lambs inventory | 1,409 | 29,583 | 6,128 | 22,539 | 1,408,694 | 0.06% | 0.08% | 0.05% | 0.09% | 0.15% |
| Wild Turkey population | 459 | 12,098 | 4,488 | 4,683 | 12,098 | 0.02% | 0.03% | 0.03% | 0.02% | 0.00% |
| Geese and Duck population | 43 | 896 | 329 | 238 | 670,590 | 0.00% | 0.00% | 0.00% | 0.00% | 0.07% |
| Poultry (litter as removed) | 205,309 | 9,401,072 | 4,714,349 | 5,912,183 | 41,486,762 | 8.23% | 25.98% | 34.67% | 24.46% | 4.42% |
| Total of all except Poultry | 2,288,572 | 26,780,595 | 8,882,770 | 18,261,031 | 897,499,166 | 91.77% | 74.02% | 65.33% | 75.54% | 95.58% |
| Total | 2,493,881 | 36,181,667 | 13,597,118 | 24,173,215 | 938,985,928 | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

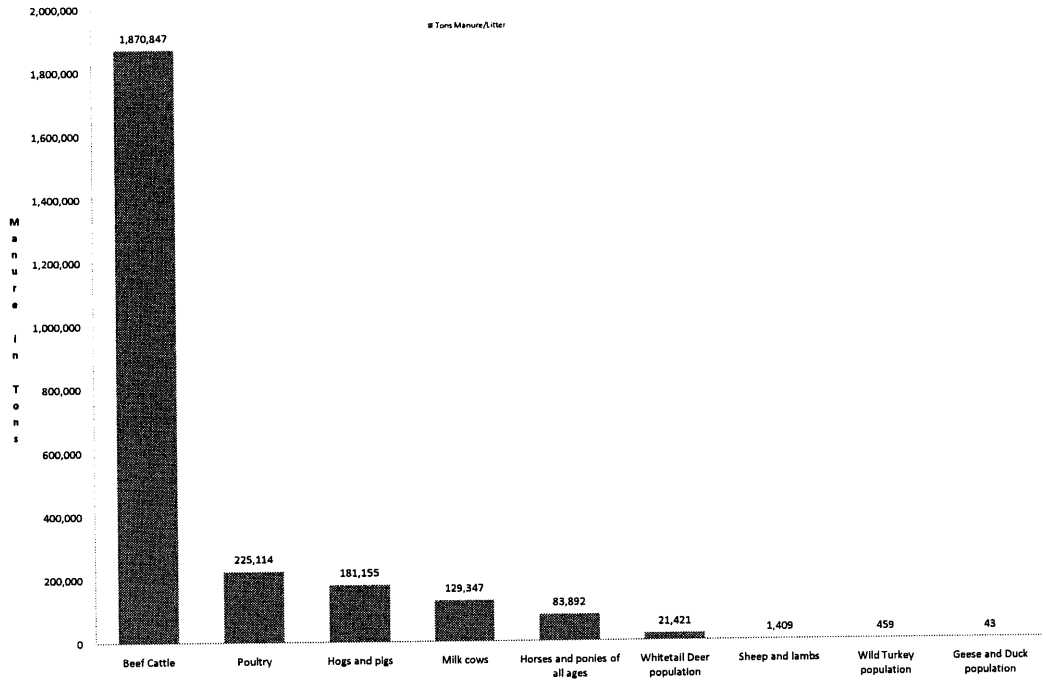
Poultry litter manure value taken from Appendix C
Poultry litter exported is 70,000 tons

**Summary of animal classes in IRW study area showing their numbers and their contribution to dry manure. Values have then been adjusted for natural composting based on stockpiling of manure through piles (dairy), lagoons (swine), and in-house composting (poultry) indicating the adjustment factors. Shown as actual numbers and percentages for the watershed. Poultry values expressed as litter and net of litter reported exported.**

| | Dry Weight Manure, tons | Percent |
|---|---|---|
| Beef cows and other cattle and calves | 217,018 | 51.68% |
| Hogs and pigs inventory | 18,116 | 4.31% |
| Milk cow inventory | 16,168 | 3.85% |
| Horses and ponies of all ages inventory | 18,456 | 4.39% |
| Whitetail Deer population | 5,355 | 1.28% |
| Sheep and lambs inventory | 352 | 0.08% |
| Wild Turkey population | 117 | 0.03% |
| Geese and Duck population | 12 | 0.00% |
| Poultry (litter as removed) | 144,351 | 34.37% |
| Total | 419,946 | 100.00% |

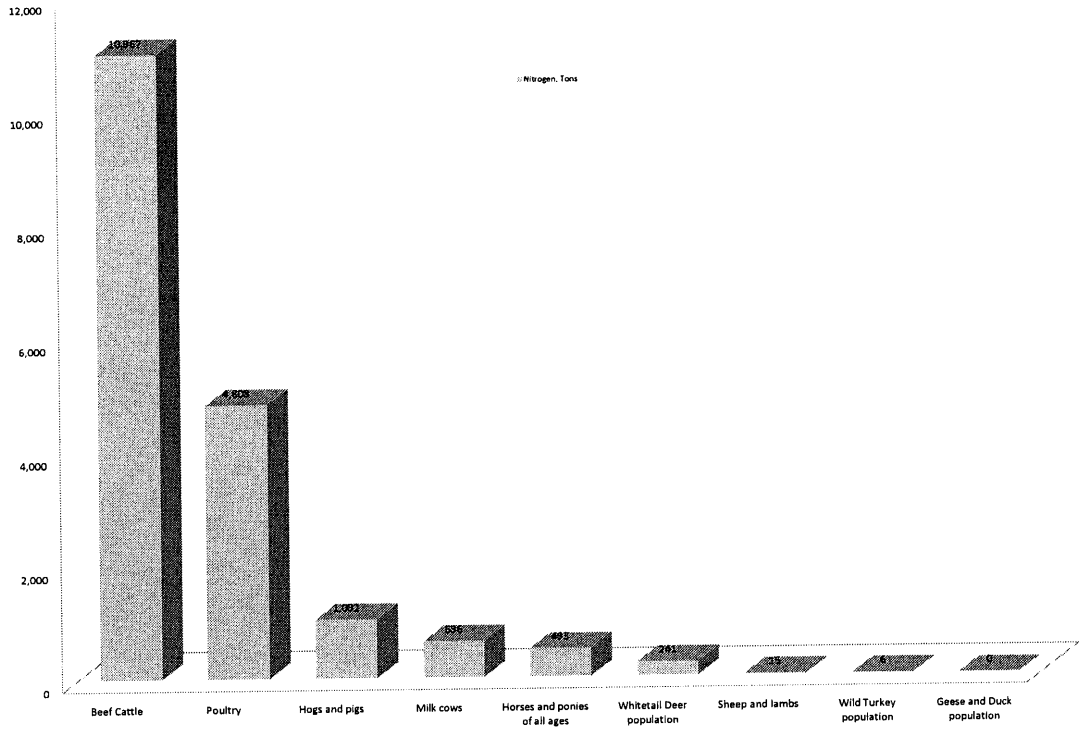
Poultry litter manure value taken from Appendix C
Poultry litter exported is 53,200 tons, dry weight
Poultry litter is 210,623 (litter dry weight) less 53,200 (exported dry weight)

## Tons of manure deposited and/or available for application to land in IRW*



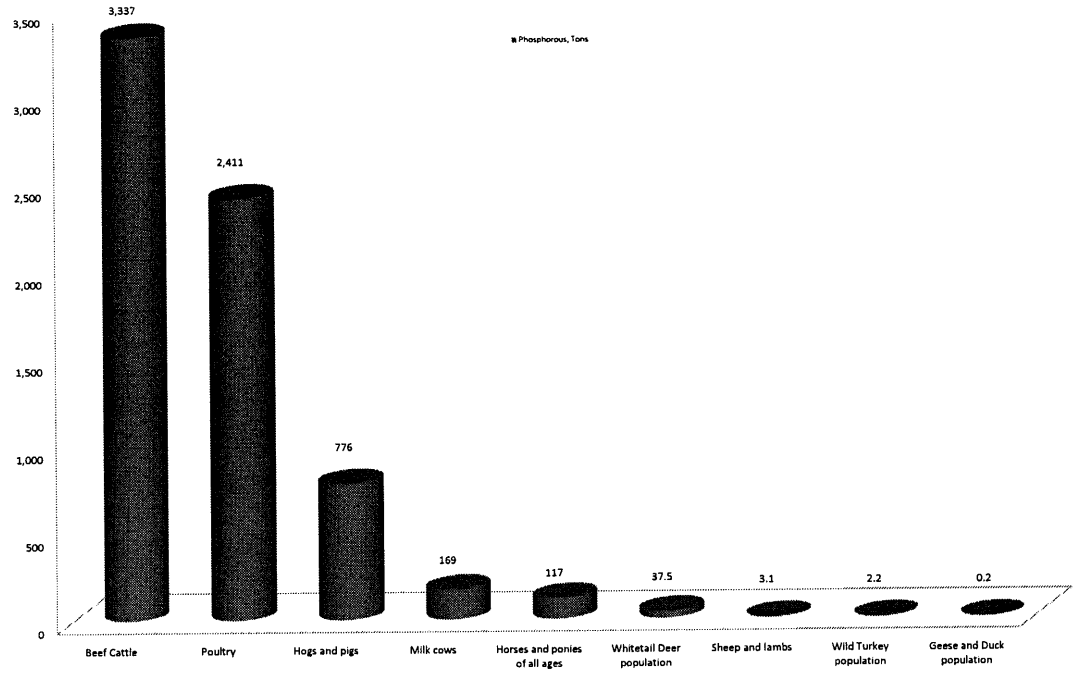

* Adjustments have been made for natural composting based on stockpiling through piles (dairy), lagoons (swine), and in-house composting (poultry) . Poultry value expressed as litter and net of litter reported exported.

**Tons of nitrogen in manure deposited and/or available for application to land in IRW***



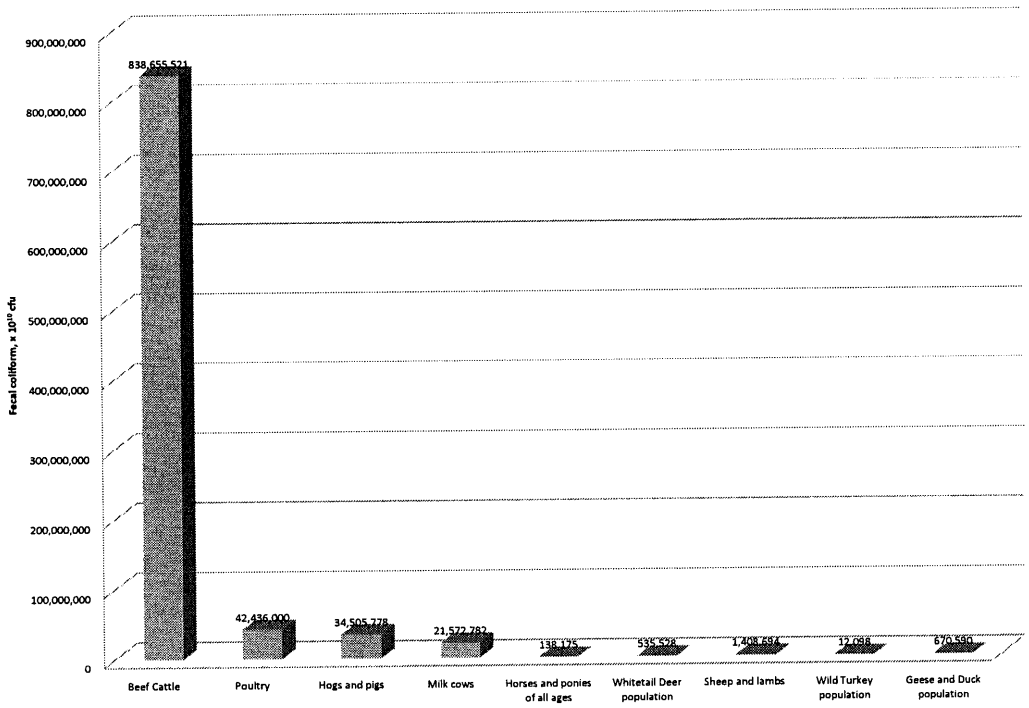

* Adjustments have been made for natural composting based on stockpiling through piles (dairy), lagoons (swine), and in-house composting (poultry) . Poultry value expressed as litter and net of litter reported exported.

**Tons of phosporous in manure deposited and/or available for application to land in IRW***



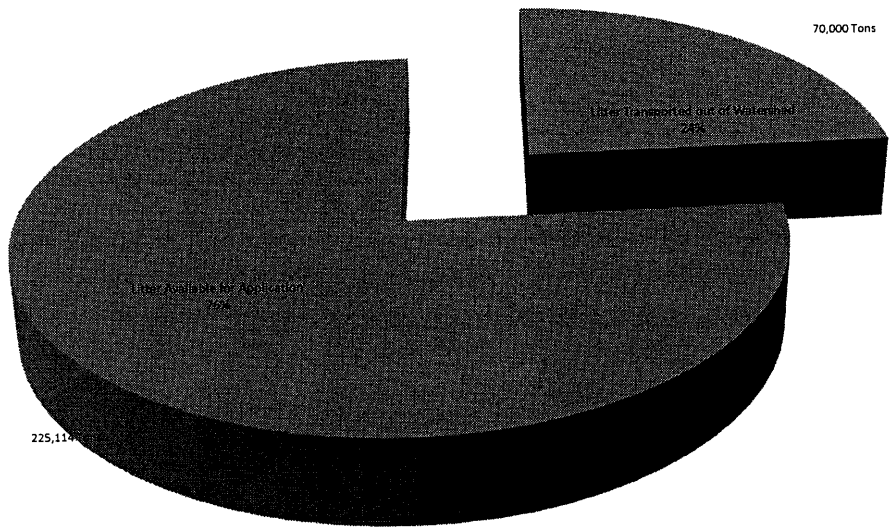

* Adjustments have been made for natural composting based on stockpiling through piles (dairy), lagoons (swine), and in-house composting (poultry) . Poultry value expressed as litter and net of litter reported exported.

**Fecal coliform in manure deposited and/or available for application to land in IRW, x10 $^{10}$ cfu***

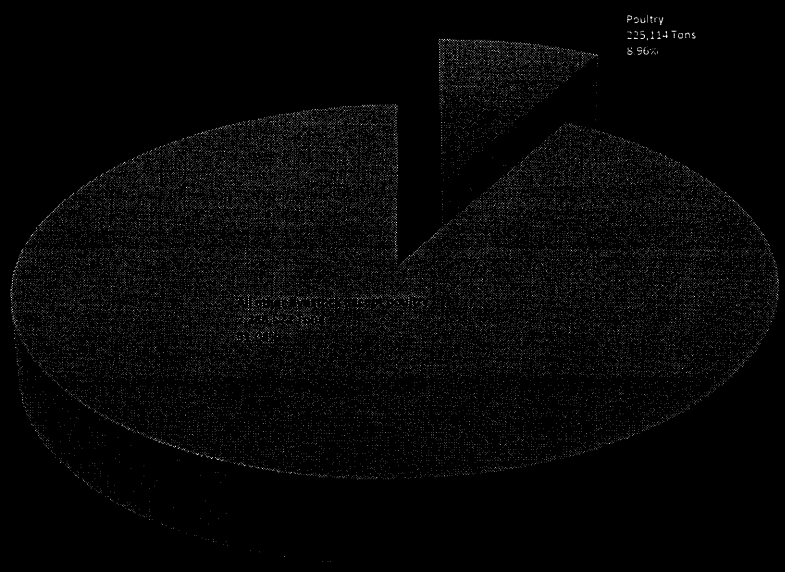



* Adjustments have been made for natural composting based on stockpiling through piles (dairy), lagoons (swine), and in-house composting (poultry) . Poultry value expressed as litter and net of litter reported exported.

**Percent of poultry litter produced in the IRW that is reported as exported and that available for application, Clay Calculations**



## SUMMARY OF TOTAL TONS OF MANURE DEPOSITED AND/OR AVAILABLE FOR APPLICATION TO LAND IN THE IRW COMPARING ALL OTHER WITH POULTRY *




* Shown in tons at application time. Dairy, swine, and poultry have reduced amount because reductions due to stockpiling and reduction of moisture.

# Appendix B

## 2002 Agricultural Census data presented by Zip Codes in Counties of Arkansas and Oklahoma in the IRW

Table BA: Arkansas study area 2002 zip code census data showing county zip code and study area data.

and

Table BO: Oklahoma study area 2002 zip code census data showing county zip code and study area data.

Table BA: Arkansas study area 2002 zip code census data showing county zip code and study area data

| | Benton County | | | | | | | | | | | | | | Benton |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Zip Code | 72704 | 72712 | 72716 | 72718 | 72719 | 72722 | 72734 | 72745 | 72756 | 72757 | 72758 | 72761 | 72762 | 72764 | County |
| Percent in County | 0.57% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 99.84% | 100.00% | 99.30% | 100.00% | 100.00% | 99.29% | 12.18% | 7.70% | Study Area |
| Percent Relevant to Study Area | 100.00% | 75.00% | 100.00% | 100.00% | 100.00% | 25.00% | 100.00% | 50.00% | 25.00% | 100.00% | 50.00% | 100.00% | 100.00% | 25.00% | Total |
| Farms by size , All farms | 1.2882 | 249 | 0 | 22 | 62 | 40.25 | 309.504 | 82.5 | 49.1535 | 11 | 37.5 | 299.8558 | 36.54 | 4.71625 | 1,205 |
| Farms by size , 1 to 49 acres | 0.6441 | 113.25 | 0 | 11 | 31 | 14.75 | 125.7984 | 49.5 | 25.56975 | 5 | 21 | 120.1409 | 19.1226 | 2.31 | 539 |
| Farms by size , 50 to 999 acres | 0.6327 | 130.5 | 0 | 11 | 31 | 24.75 | 179.712 | 33 | 23.08725 | 6 | 15 | 174.7504 | 16.8084 | 2.29075 | 649 |
| Farms by size , 1,000 acres or more | * | 5.25 | 0 | | * | * | | * | | * | | 4.9645 | 0.609 | 0.1155 | 11 |
| Value of all agricultural products sold , Total farms | 1.2882 | 249 | 0 | 22 | 62 | 40.25 | 309.504 | 82.5 | 49.1535 | 11 | 37.5 | 299.8558 | 36.54 | 4.71625 | 1,205 |
| Value of all agricultural products sold , Less than $50,000 (farms) | 1.1229 | 203.25 | 0 | 20 | 46 | 24.75 | 210.6624 | 69.5 | 43.44375 | 11 | 32.5 | 218.438 | 30.2064 | 3.696 | 915 |
| Value of all agricultural products sold , $50,000 to $249,999 (farms) | 0.0684 | 16.5 | 0 | | 5 | 4.75 | 29.952 | 6 | 1.24125 | | 3 | 29.787 | 2.1924 | 0.2695 | 99 |
| Value of all agricultural products sold , $250,000 or more (farms) | 0.0969 | 29.25 | 0 * | | 11 | 10.75 | 68.8896 | 7 | 4.4685 | * | | 51.6308 | 4.1412 | 0.75075 | 188 |
| Value of all crops sold, including nursery and greenhouse , Total farms | 0.2907 | 57.75 | 0 | 5 | 5 | 6.25 | 53.9136 | 12.5 | 8.4405 * | | 7.5 | 68.5101 | 4.6284 | 0.6545 | 230 |
| Value of all crops sold, including nursery and greenhouse , Less than $50,000 (farms) | 0.2793 | 54 | 0 | 5 | 5 | 5.75 | 51.9168 | 10.5 | 8.19225 * | | 7.5 | 65.5314 | 4.3848 | 0.59675 | 219 |
| Value of all crops sold, including nursery and greenhouse , $50,000 to $249,999 (farms) | * | * | 0 | | * | * | * | * | | | * | * | * | | 0 |
| Value of sales grains, oilseeds, dry beans and dry peas , Total farms | * | * | 0 | | * | * | * | * | | | | * | | | 0 |
| Value of sales grains, oilseeds, dry beans and dry peas , $50,000 or more (farms) | | * | 0 | | | | | | | | | | | | 0 |
| Value of sales vegetables, melons, potatoes and sweetpotatoes , Total farms | * | * | 0 * | * | | * | * | * | | * | * | * | | 0.09625 | 0 |
| Value of sales vegetables, melons, potatoes and sweetpotatoes , $50,000 or more (farms) | | * | 0 | | | * | | | | | * | | | | 0 |
| Value of sales fruits, tree nuts, and berries , Total farms | * | * | 0 | | | * | | 2.5 | 2.4825 | * | * | | 1.0962 * | | 6 |
| Value of sales nursery, greenhouse, floriculture and sod , Total farms | 0.0399 * | | 0 * | | * | | | * | * | | * | | * | | 0 |
| Value of sales nursery, greenhouse, floriculture and sod , $50,000 or more (farms) | * | * | 0 | | * | | | * | | | * | | * | | 0 |
| Value of sales other crops and hay , Total farms | 0.2223 | 50.25 | 0 * | * | | 5.5 | 50.9184 | 10 | 4.965 | | 6.5 | 60.5669 | 3.1668 | 0.51975 | 193 |
| Value of all livestock, poultry and their products sold , Total farms | 0.9861 | 178.5 | 0 | 16 | 45 | 34 | 259.584 | 63.5 | 35.49975 | 6 | 27 | 231.3457 | 28.9884 | 3.86925 | 930 |
| Value of all livestock, poultry and their products sold , Less than $50,000 (farms) | 0.8322 | 135.75 | 0 | 14 | 29 | 18.75 | 161.7408 | 52.5 | 30.03825 | 6 | 22 | 153.8995 | 22.8984 | 2.90675 | 650 |
| Value of all livestock, poultry and their products sold , $50,000 to $249,999 (farms) | 0.057 | 14.25 | 0 | | 5 | 4.5 | 30.9504 | 4 * | | | 3 | 25.8154 | 1.9488 | 0.231 | 90 |
| Value of all livestock, poultry and their products sold , $250,000 or more (farms) | 0.0969 | 28.5 | 0 * | | 11 | 10.75 | 66.8928 | 7 | 4.4685 | * | | 51.6308 | 4.1412 | 0.7315 | 185 |
| Value of sales hogs and pigs , Total farms | 0.0399 * | | 0 * | | * | * | | | 1.4895 | | | 4.9645 * | * | | 6 |
| Value of sales milk and other dairy products from cows , Total farms | * | 4.5 | 0 | | * | | 6.9888 | * | | | | 10.9219 * | | | 22 |
| Value of sales milk and other dairy products from cows , $50,000 or more (farms) | * | 3.75 | 0 | | * | | 5.9904 | * | | | | 9.929 * | | | 20 |
| Value of sales cattle and calves , Total farms | 0.7923 | 144.75 | 0 | 13 | 40 | 26.75 | 196.6848 | 45.5 | 28.797 | 6 | 22.5 | 178.722 | 25.3344 | 3.0415 | 732 |
| Value of sales cattle and calves , $50,000 or more (farms) | 0.0285 | 15 | 0 | * | | 1.75 | 13.9776 * | | | | 2.5 | 12.9077 | 0.609 * | | 47 |
| Value of sales sheep, goats and their products , Total farms | 0.0342 | 6 | 0 | * | | 1.5 | 13.9776 * | | 1.73775 | * | * | | 1.0962 | 0.13475 | 24 |
| Value of sales horses, ponies, mules, burros and donkeys , Total farms | 0.1083 | 14.25 | 0 * | * | | 1.25 | 13.9776 | 4.5 | 2.979 | * | | 16.8793 | 2.0706 | 0.51975 | 57 |
| Value of sales poultry and eggs , Total farms | 0.1482 | 32.25 | 0 * | | 12 | 13.25 | 85.8624 | 10.5 | 5.958 | | 2.5 | 67.5172 | 5.9682 | 0.94325 | 237 |
| Value of sales poultry and eggs , $50,000 or more (farms) | 0.114 | 27 | 0 * | | 12 | 13.25 | 85.8624 | 9.5 | 4.965 | | 2.5 | 61.5598 | 5.481 | 0.8855 | 223 |
| Value of sales other animals and other animal products , Total farms | 0.0342 | | 0 | | | * | | 5.5 | | * | * | * | | 0.09625 | 6 |
| Farms by tenure , Full owners | 1.0203 | 168 | 0 | 18 | 44 | 29.75 | 213.6576 | 58 | 38.2305 | 11 | 28.5 | 229.3599 | 26.0652 | 3.63825 | 869 |
| Farms by tenure , Part owners | 0.2337 | 67.5 | 0 * | | 15 | 9.75 | 78.8736 | 20 | 9.68175 | | 7.5 | 56.5953 | 8.526 | 1.001 | 275 |
| Farms by tenure , Tenants | 0.0342 | 13.5 | 0 | * | * | | 16.9728 | 4.5 | 1.24125 | * | | 13.9006 | 1.9488 * | | 52 |
| , Farms with one operator | 0.7923 | 136.5 | 0 | 14 | 35 | 22.25 | 175.7184 | 55.5 | 28.05225 | 6 | 24.5 | 176.7362 | 21.924 | 2.849 | 700 |
| , Farms with multiple operators | 0.4959 | 112.5 | 0 | 8 | 27 | 18 | 133.7856 | 27 | 21.10125 | 5 | 13 | 123.1196 | 14.616 | 1.86725 | 505 |
| , Farms with women operators | 0.4845 | 112.5 | 0 | 7 | 26 | 18.75 | 151.7568 | 35.5 | 22.09425 | 5 | 18 | 124.1125 | 14.2506 | 2.002 | 537 |
| , Farms with principal operator living on the farm operated | 1.1799 | 222 | 0 | 22 | 57 | 36.75 | 287.5392 | 71 | 39.47175 | 9 | 31 | 261.1327 | 28.1358 | 3.94625 | 1,070 |
| , Farms with principal operator reporting primary occupation as farming | 0.7695 | 130.5 | 0 | 10 | 38 | 25.25 | 185.7024 | 41.5 | 25.56975 * | | 22 | 163.8285 | 20.097 | 2.387 | 666 |
| , Farms with principal operator reporting working off the farm for 200 days or more | 0.5985 | 114 | 0 | 11 | 31 | 19.25 | 137.7792 | 41 | 22.3425 | 8 | 16 | 139.006 | 17.2956 | 1.848 | 559 |
| , Farms with farm-related sources of income | 0.1881 | 33.75 | 0 * | | 10 | 5.25 | 38.9376 | 10 | 4.965 | | 4 | 40.7089 | 4.5066 | 0.51975 | 153 |
| , Farms with production contracts | 0.1254 | 27.75 | 0 * | | 12 | 13 | 88.8576 | 9.5 | 5.4615 | | 2.5 | 59.574 | 5.6028 | 0.86625 | 225 |
| , Farms with direct sales | 0.0855 | 6.75 | 0 * | * | * | | 4.992 | 4 | 2.4825 | | 3.5 | 6.9503 | 1.3398 | 0.13475 | 30 |
| , Farms with grain storage capacity | * | 3.75 | 0 | | * | | 7.9872 | * | | | * | | * | | 12 |
| Payments received from Federal Farm Programs , Total farms | * | 10.5 | 0 * | | 6 | 1.75 | 29.952 | 3 | 1.73775 | | 3 | 14.8935 | 0.609 * | | 71 |
| Payments received from Federal Farm Programs , Less than $50,000 (farms) | * | 10.5 | 0 * | | 6 | 1.75 | 29.952 | 3 | 1.73775 | | 3 | 14.8935 | 0.609 * | | 71 |
| Cropland harvested , Total farms | 0.7638 | 156.75 | 0 | 12 | 40 | 20.75 | 203.6736 | 38 | 24.57675 * | | 21.5 | 201.5587 | 19.6098 | 2.32925 | 742 |
| Cropland harvested , 1 to 49 acres (farms) | 0.4902 | 96 | 0 | 7 | 26 | 13 | 127.7952 | 24.5 | 19.61175 * | | 14 | 128.0841 | 15.3468 | 1.5015 | 473 |
| Cropland harvested , 50 to 499 acres (farms) | 0.2736 | 58.5 | 0 | 5 | 14 | 7.5 | 74.88 | 13 | 4.965 | | 7.5 | 70.4959 | 4.0194 | 0.8085 | 261 |
| Cropland harvested , 500 acres or more (farms) | * | * | 0 | | * | * | * | | | | * | * | * | * | 0 |
| , Cropland used for pasture or grazing, total farms | 0.5358 | 112.5 | 0 | 9 | 28 | 18.5 | 155.7504 | 31 | 16.881 * | | 17 | 137.0202 | 16.443 | 1.925 | 545 |
| , Cropland idle or used for cover crops or soil-improvement but NOT harvested and NOT pastured or grazed, total farms | 0.057 | 6.75 | 0 | | | 1.75 | 16.9728 | 4 | 1.73775 | * | | 15.8864 | 1.5834 | 0.13475 | 49 |
| , Cropland on which all crops failed or were abandoned, total farms | * | * | 0 | | | 1.5 * | | * | * | | * | | 0.609 | | 2 |
| , Cropland in cultivated summer fallow, total farms | * | | 0 | | | * | | * | * | | * | | * | | 0 |
| , Total woodland, total farms | 0.5472 | 91.5 | 0 * | | 21 | 23.75 | 152.7552 | 32 | 26.3145 | 8 | 17 | 146.9492 | 14.8596 | 1.848 | 537 |
| Permanent pasture and rangeland , Total farms | 0.6555 | 120 | 0 | 11 | 28 | 17 | 148.7616 | 37 | 23.832 | 6 | 20.5 | 146.9492 | 18.5136 | 2.75275 | 581 |
| Permanent pasture and rangeland , 100 acres or more (farms) | 0.0855 | 18 | 0 * | | 5 | 4.25 | 23.9616 | 4.5 | 2.23425 * | | 3 | 21.8438 | 1.9488 | 0.4235 | 85 |
| All other land , Total farms | 0.6498 | 114 | 0 | 12 | 34 | 19.5 | 169.728 | 35.5 | 19.86 * | | 19.5 | 149.9279 | 19.2444 | 2.079 | 596 |
| All other land , 100 acres or more (farms) | * | | 0 * | * | * | * | | * | | | * | * | * | 0.1155 | 0 |
| Land under Conservation Reserve or Wetlands Reserve Programs , Total farms | | | 0 | | | * | | * | | | | * | | | 0 |
| , Cattle and calves inventory, total farms | 0.9405 | 166.5 | 0 | 14 | 52 | 30.5 | 233.6256 | 54 | 34.2585 | 10 | 24.5 | 206.5232 | 28.7448 | 3.44575 | 859 |
| , Beef cow inventory, total farms | 0.8379 | 148.5 | 0 | 12 | 44 | 27.25 | 201.6768 | 46.5 | 29.2935 | 8 | 22.5 | 182.6936 | 26.3088 | 3.003 | 753 |
| , Milk cow inventory, total farms | * | 4.5 | 0 | | * | | 8.9856 | * | | | | 13.9006 | 0.609 | | 28 |
| , Cattle and calves sold, total farms | 0.7923 | 144.75 | 0 | 13 | 40 | 26.75 | 196.6848 | 45.5 | 28.797 | 6 | 22.5 | 178.722 | 25.3344 | 3.0415 | 732 |
| , Hogs and pigs inventory, total farms | 0.0513 * | | 0 * | | * | * | | | 1.24125 | | * | | * | 0.09625 | 1 |
| , Hogs and pigs sold, total farms | 0.0399 * | | 0 * | | * | * | | | 1.4895 | | | 4.9645 * | | * | 6 |
| , Sheep and lambs inventory, total farms | * | 6 | 0 | | | 1.25 | 9.984 * | | 1.4895 | * | | 5.9574 | 0.8526 * | | 26 |
| , Layers 20 weeks old and older inventory, total farms | 0.0684 | 9.75 | 0 * | * | | 2 | 16.9728 | 3 | 3.72375 | * | | 20.8509 | 1.0962 | 0.1155 | 58 |
| , Horses and ponies of all ages inventory, total farms | 0.4332 | 79.5 | 0 | 7 | 18 | 9.75 | 85.8624 | 22.5 | 16.881 * | | 11 | 85.3894 | 10.353 | 1.55925 | 348 |
| , Horses and ponies of all ages sold, total farms | 0.1026 | 14.25 | 0 * | * | | 1.25 | 13.9776 | 4.5 | 2.979 | * | | 16.8793 | 1.5834 | 0.51975 | 56 |
| , Broilers and other meat type chickens sold, total farms | 0.0912 | 21 | 0 * | | 12 | 10.5 | 59.904 | 4 | 4.22025 | * | | 42.6947 | 4.5066 | 0.63525 | 160 |
| , Turkeys sold, total farms | * | 3.75 | 0 | | * | | 6.9888 * | * | | * | * | * | | 0.1155 | 11 |
| Corn for grain , Total farms | | | 0 | | | | | * | | | | | | | 0 |
| All wheat for grain , Total farms | * | * | 0 | | * | * | * | | | | | * | | | 0 |
| Rice, Total farms | | | 0 | | | | | | | | | | | | 0 |
| Soybeans for beans , Total farms | | | 0 | | | * | | * | | | | * | | | 0 |
| , Dry edible beans (excluding limas), total farms | | | 0 | | | | | | | | | | | | 0 |
| Forage - Land used for all hay and all haylage, grass silage, and greenchop , Total farms | 0.7068 | 150 | 0 | 12 | 39 | 20.5 | 202.6752 | 35.5 | 21.10125 * | | 20.5 | 195.6013 | 18.6354 | 2.233 | 718 |
| Forage - Land used for all hay and all haylage, grass silage, and greenchop , 1 to 49 acres (farms) | 0.4389 | 90.75 | 0 | 7 | 25 | 13 | 127.7952 | 23 | 16.3845 * | | 13 | 124.1125 | 14.7378 | 1.4245 | 457 |
| Forage - Land used for all hay and all haylage, grass silage, and greenchop , 50 to 249 acres (farms) | 0.2565 | 53.25 | 0 | 5 | 11 | 6.75 | 68.8896 | 12 | 4.71675 | | 7 | 67.5172 | 3.5322 | 0.78925 | 241 |
| Forage - Land used for all hay and all haylage, grass silage, and greenchop , 250 acres or more (farms) | * | 6 | 0 | * | * | | 5.9904 * | | | * | * | * | * | * | 12 |
| Vegetables and melons for sale , Total farms | * | * | 0 * | * | | * | * | * | | * | * | * | | 0.09625 | 0 |
| Land in orchards , Total farms | | | 0 | | | * | * | * | | * | | | 0.8526 * | | 1 |
| Land in orchards , 0.1 to 14.9 acres (farms) | | | 0 | | | | * | * | | * | | | 0.7308 | | 1 |
| Land in orchards , 15.0 to 99.9 acres (farms) | | | 0 | | | * | * | | | | | * | | | 0 |
| , Berries, total farms | * | * | 0 | | | * | * | | 2.23425 | | * | * | * | | 2 |

Table BA: Arkansas study area 2002 zip code census data showing county zip code and study

| | Washington County | | | | | | | | | | | | | | | | | | | | Washington | Study Area |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Zip Code | 72702 | 72703 | 72704 | 72717 | 72728 | 72729 | 72730 | 72734 | 72741 | 72744 | 72749 | 72753 | 72756 | 72761 | 72762 | 72764 | 72765 | 72766 | 72769 | 72770 | County | Total |
| Percent in County | 100.00% | 98.99% | 99.43% | 100.00% | 100.00% | 100.00% | 100.00% | 0.14% | 100.00% | 100.00% | 100.00% | 99.87% | 0.40% | 0.71% | 87.82% | 92.30% | 100.00% | 100.00% | 100.00% | 100.00% | Study Area | Arkansas |
| Percent Relevant to Study Area | 100.00% | 25.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 25.00% | 100.00% | 100.00% | 25.00% | 100.00% | 100.00% | 100.00% | 100.00% | Total | |
| Farms by size , All farms | 19 | 41.823275 | 224.7118 | 101 | 6 | 27 | 116 | 0.434 * | | 299 | 11 | 323.5788 | 0.198 | 2.1442 | 263.46 | 56.53375 | 20 | 10 | 89 | 15 | 1,626 | 2,832 |
| Farms by size , 1 to 49 acres | 6 | 17.32325 | 112.3559 | 36 * | * | | 67 | 0.1764 * | | 111 * | | 130.8297 | 0.103 | 0.8591 | 137.8774 | 27.69 | 5 | 5 | 26 | 8 | 691 | 1,230 |
| Farms by size , 50 to 999 acres | 13 | 24.25255 | 110.3673 | 62 | 5 | 23 | 48 | 0.252 * | | 188 | 7 | 190.7517 | 0.093 | 1.2496 | 121.1916 | 27.45925 | 12 | 5 | 62 | 7 | 908 | 1,556 |
| Farms by size , 1,000 acres or more | * | * | * | | | * | * | | | | | * | * | 0.0355 | 4.391 | 1.3845 * | | * | | | 6 | 17 |
| Value of all agricultural products sold , Total farms | 19 | 41.823275 | 224.7118 | 101 | 6 | 27 | 116 | 0.434 * | | 299 | 11 | 323.5788 | 0.198 | 2.1442 | 263.46 | 56.53375 | 20 | 10 | 89 | 15 | 1,626 | 2,832 |
| Value of all agricultural products sold , Less than $50,000 (farms) | 16 | 37.368725 | 195.8771 | 80 | 6 | 18 | 89 | 0.2954 * | | 216 | 11 | 273.6438 | 0.175 | 1.562 | 217.7936 | 44.304 | 13 | 10 | 66 | 12 | 1,308 | 2,223 |
| Value of all agricultural products sold , $50,000 to $249,999 (farms) | * | 1.237375 | 11.9316 | 6 | * | | 9 | 0.042 | | 38 | | 25.9662 | 0.005 | 0.213 | 15.8076 | 3.2305 * | | | 13 * | | 124 | 223 |
| Value of all agricultural products sold , $250,000 or more (farms) | * | 3.217175 | 16.9031 | 15 | | 6 | 18 | 0.0966 | | 45 | | 23.9688 | 0.018 | 0.3692 | 29.8588 | 8.99925 | 5 | | 10 * | | 182 | 370 |
| Value of all crops sold, including nursery and greenhouse , Total farms | 8 | 8.41415 | 50.7093 | 11 * | | 5 | 24 | 0.0756 * | | 54 | | 47.9376 | 0.034 | 0.4899 | 33.3716 | 7.8455 * | | | 13 * | | 264 | 494 |
| Value of all crops sold, including nursery and greenhouse , Less than $50,000 (farms) | 6 | 8.41415 | 48.7207 | 11 * | | 5 | 24 | 0.0728 * | | 50 | | 46.9389 | 0.033 | 0.4686 | 31.6152 | 7.15325 * | | | 13 * | | 252 | 471 |
| Value of all crops sold, including nursery and greenhouse , $50,000 to $249,999 (farms) | * | * | | | | | * | | * | | | * | * | * | * | * | | | * | | 0 | 0 |
| Value of sales grains, oilseeds, dry beans and dry peas , Total farms | | 1.237375 * | | | | | * | | | | | * | * | | * | | | | | | 1 | 1 |
| Value of sales grains, oilseeds, dry beans and dry peas , $50,000 or more (farms) | | | | | | | | | | | | | | | | | | | | | 0 | 0 |
| Value of sales vegetables, melons, potatoes and sweetpotatoes , Total farms | * | * | | | | * | * | | * | | | * | * | * | * | 1.15375 | | * | | | 1 | 1 |
| Value of sales vegetables, melons, potatoes and sweetpotatoes , $50,000 or more (farms) | | | | | | | * | | | | | | * | | | | | | | | 0 | 0 |
| Value of sales fruits, tree nuts, and berries , Total farms | * | 1.48485 * | * | | | * | * | * | * | | | * | 0.01 * | | 7.9038 * | | | | * | | 9 | 15 |
| Value of sales nursery, greenhouse, floriculture and sod , Total farms | * | * | 6.9601 | | * | | | | * | | | * | * | * | | * | | * | | | 7 | 7 |
| Value of sales nursery, greenhouse, floriculture and sod , $50,000 or more (farms) | * | | * | | | | | | * | | | * | * | * | | * | | | | | 0 | 0 |
| Value of sales other crops and hay , Total farms | 6 | 6.186875 | 38.7777 | 10 * | * | | 21 | 0.0714 | | 49 | | 44.9415 | 0.02 | 0.4331 | 22.8332 | 6.23025 * | | | 11 * | | 216 | 409 |
| Value of all livestock, poultry and their products sold , Total farms | 8 | 26.974775 | 172.0139 | 84 | 5 | 21 | 84 | 0.364 * | | 229 | 9 | 251.6724 | 0.143 | 1.6543 | 209.0116 | 46.38075 | 17 | 10 | 83 | 11 | 1,269 | 2,200 |
| Value of all livestock, poultry and their products sold , Less than $50,000 (farms) | 7 | 22.520225 | 145.1678 | 63 | 5 | 12 | 57 | 0.2268 * | | 149 | 9 | 203.7348 | 0.121 | 1.1005 | 165.1016 | 34.84325 | 10 | 10 | 61 | 8 | 964 | 1,614 |
| Value of all livestock, poultry and their products sold , $50,000 to $249,999 (farms) | | 1.237375 | 9.943 | 6 | * | | 9 | 0.0434 | | 35 | | 23.9688 * | | 0.1846 | 14.0512 | 2.769 * | | | 13 * | | 115 | 205 |
| Value of all livestock, poultry and their products sold , $250,000 or more (farms) | * | 3.217175 | 16.9031 | 15 | | 6 | 18 | 0.0938 | | 45 | | 23.9688 | 0.018 | 0.3692 | 29.8588 | 8.7685 | 5 | | 9 * | | 181 | 366 |
| Value of sales hogs and pigs , Total farms | * | | 6.9601 | | | * | * | | * | | | 10.9857 | 0.006 | 0.0355 * | * | * | * | * | * | | 18 | 24 |
| Value of sales milk and other dairy products from cows , Total farms | | * | * | | * | | | 0.0098 | | 10 | | * | * | 0.0781 * | | | | | 8 | | 18 | 40 |
| Value of sales milk and other dairy products from cows , $50,000 or more (farms) | | * | * | | * | | | 0.0084 | | 10 | | * | * | 0.071 * | | | | | 8 | | 18 | 38 |
| Value of sales cattle and calves , Total farms | 6 | 21.530325 | 138.2077 | 77 * | | 20 | 70 | 0.2758 * | | 196 | 9 | 215.7192 | 0.116 | 1.278 | 182.6656 | 36.4585 | 13 | 6 | 77 | 6 | 1,076 | 1,808 |
| Value of sales cattle and calves , $50,000 or more (farms) | * | * | 4.9715 | 5 | * | | 5 | 0.0196 | | 19 | | 8.9883 | | 0.0923 | 4.391 * | * | | * | | | 47 | 94 |
| Value of sales sheep, goats and their products , Total farms | * | 1.237375 | 5.9658 | 11 | | * | | 0.0196 | | 7 | | 12.9831 | 0.007 * | | 7.9038 | 1.61525 | | | | | 48 | 72 |
| Value of sales horses, ponies, mules, burros and donkeys , Total farms | | 4.207075 | 18.8917 | * | * | | 10 | 0.0196 | | 13 | | 20.9727 | 0.012 | 0.1207 | 14.9294 | 6.23025 * | * | | 7 * | | 95 | 152 |
| Value of sales poultry and eggs , Total farms | | 3.9596 | 25.8518 | 19 | | 6 | 21 | 0.1204 | | 61 | | 36.9519 | 0.024 | 0.4828 | 43.0318 | 11.30675 * | * | | 13 * | | 242 | 479 |
| Value of sales poultry and eggs , $50,000 or more (farms) | | 3.712125 | 19.886 | 16 | | 6 | 21 | 0.1204 | | 55 | | 36.9519 | 0.02 | 0.4402 | 39.519 | 10.6145 * | | | 12 * | | 221 | 444 |
| Value of sales other animals and other animal products , Total farms | * | * | 5.9658 * | | | | * | | * | | | * | * | * | | 1.15375 | | | | | 7 | 13 |
| Farms by tenure , Full owners | 17 | 32.17175 | 177.9797 | 83 | 6 | 21 | 75 | 0.2996 * | | 231 | 7 | 258.6633 | 0.154 | 1.6401 | 187.9348 | 43.61175 | 12 | 10 | 69 | 10 | 1,243 | 2,113 |
| Farms by tenure , Part owners | * | 6.43435 | 40.7663 | 17 | * | | 31 | 0.1106 * | | 60 * | | 48.9363 | 0.039 | 0.4047 | 61.474 | 11.999 | 7 | | 17 * | | 302 | 577 |
| Farms by tenure , Tenants | | 3.217175 | 5.9658 * | | * | | 10 | 0.0238 | | 8 | | 15.9792 | 0.005 | 0.0994 | 14.0512 * | * | | * | * | | 57 | 109 |
| , Farms with one operator | 17 | 26.23235 | 138.2077 | 52 * | | 10 | 66 | 0.2464 * | | 173 | 9 | 185.7582 | 0.113 | 1.2638 | 158.076 | 34.151 | 13 * | | 57 | 10 | 951 | 1,651 |
| , Farms with multiple operators | * | 15.590925 | 86.5041 | 49 | 5 | 17 | 50 | 0.1876 * | | 126 * | | 137.8206 | 0.085 | 0.8804 | 105.384 | 22.38275 | 7 | 7 | 32 | 5 | 667 | 1,173 |
| , Farms with women operators | * | 18.31315 | 84.5155 | 57 | 5 | 16 | 45 | 0.2128 * | | 133 * | | 162.7881 | 0.089 | 0.8875 | 102.7494 | 23.998 | 6 | 7 | 34 | 8 | 705 | 1,242 |
| , Farms with principal operator living on the farm operated | 15 | 27.7172 | 205.8201 | 93 | 6 | 26 | 88 | 0.4032 * | | 283 | 9 | 288.6243 | 0.159 | 1.8673 | 202.8642 | 47.30375 | 14 | 10 | 83 | 13 | 1,415 | 2,485 |
| , Farms with principal operator reporting primary occupation as farming | 5 | 20.045475 | 134.2305 | 66 * | | 19 | 57 | 0.2604 * | | 174 | 9 | 176.7699 | 0.103 | 1.1715 | 144.903 | 28.613 | 10 * | | 63 | 6 | 915 | 1,581 |
| , Farms with principal operator reporting working off the farm for 200 days or more | 14 | 18.8081 | 104.4015 | 40 * | | 6 | 69 | 0.1932 * | | 111 * | | 151.8024 | 0.09 | 0.994 | 124.7044 | 22.152 | 9 | 6 | 30 | 7 | 715 | 1,274 |
| , Farms with farm-related sources of income | * | 5.196975 | 32.8119 | 19 | * | | 11 | 0.0546 * | | 43 * | | 36.9519 | 0.02 | 0.2911 | 32.4934 | 6.23025 * | | | 12 * | | 199 | 352 |
| , Farms with production contracts | * | 3.9596 | 21.8746 | 17 | | 6 | 22 | 0.1246 | | 52 | | 37.9506 | 0.022 | 0.426 | 40.3972 | 10.38375 * | * | | 14 * | | 226 | 451 |
| , Farms with direct sales | * | 3.712125 | 14.9145 * | | * | * | | 0.007 * | | 11 | | 7.9896 | 0.01 | 0.0497 | 9.6602 | 1.61525 | | | | | 49 | 79 |
| , Farms with grain storage capacity | | * | * | | | | | 0.0112 | * | | | * | * | * | | * | | | | | 0 | 12 |
| Payments received from Federal Farm Programs , Total farms | | * | * | 5 * | * | | 7 | 0.042 | | 11 | | 6.9909 | 0.007 | 0.1065 | 4.391 * | * | | * | | | 35 | 106 |
| Payments received from Federal Farm Programs , Less than $50,000 (farms) | | * | * | 5 * | * | | 7 | 0.042 | | 11 | | 6.9909 | 0.007 | 0.1065 | 4.391 * | * | | * | | | 35 | 106 |
| Cropland harvested , Total farms | 15 | 20.540425 | 133.2362 | 70 * | | 21 | 73 | 0.2856 * | | 208 * | | 191.7504 | 0.099 | 1.4413 | 141.3902 | 27.92075 | 12 | 5 | 63 | 8 | 992 | 1,733 |
| Cropland harvested , 1 to 49 acres (farms) | 8 | 13.116175 | 85.5098 | 40 * | | 11 | 53 | 0.1792 * | | 128 * | | 124.8375 | 0.079 | 0.9159 | 110.6532 | 17.9985 | 6 | 5 | 31 | 5 | 640 | 1,114 |
| Cropland harvested , 50 to 499 acres (farms) | 7 | 7.176775 | 47.7264 | 29 * | | 10 | 19 | 0.105 * | | 80 * | | 66.9129 | 0.02 | 0.5041 | 28.9806 | 9.6915 | 6 | | 32 * | | 344 | 605 |
| Cropland harvested , 500 acres or more (farms) | | * | * | | | * | * | | | | | | * | * | * | * | | | | | 0 | 0 |
| , Cropland used for pasture or grazing, total farms | * | 18.065675 | 93.4642 | 54 | 5 | 15 | 37 | 0.2184 * | | 150 * | | 150.8037 | 0.068 | 0.9798 | 118.557 | 23.075 | 13 | 5 | 40 | 6 | 730 | 1,275 |
| , Cropland idle or used for cover crops or soil-improvement but NOT harvested and NOT pastured or grazed, total farms | | * | 9.943 * | | * | | 6 | 0.0238 | | 24 | | 6.9909 | 0.007 | 0.1136 | 11.4166 | 1.61525 * | | * | | | 60 | 109 |
| , Cropland on which all crops failed or were abandoned, total farms | | 1.237375 * | | | | * | * | | * | | * | * | * | | 4.391 | | | | | | 6 | 8 |
| , Cropland in cultivated summer fallow, total farms | * | | * | | | | * | | * | | | * | * | | * | | | | | | 0 | 0 |
| , Total woodland, total farms | 14 | 21.7778 | 95.4528 | 56 * | | 22 | 30 | 0.2142 * | | 155 | 9 | 152.8011 | 0.106 | 1.0508 | 107.1404 | 22.152 | 6 * | | 41 | 7 | 741 | 1,277 |
| Permanent pasture and rangeland , Total farms | 7 | 20.045475 | 114.3445 | 49 * | | 12 | 59 | 0.2086 * | | 135 | 6 | 169.779 | 0.096 | 1.0508 | 133.4864 | 32.99725 | 11 | 5 | 47 | 6 | 809 | 1,390 |
| Permanent pasture and rangeland , 100 acres or more (farms) | * | 4.9495 | 14.9145 | 11 | * | | 6 | 0.0336 | | 23 * | | 25.9662 | 0.009 | 0.1562 | 14.0512 | 5.0765 | 5 * | | 21 * | | 131 | 216 |
| All other land , Total farms | 8 | 15.095975 | 113.3502 | 56 * | | 8 | 48 | 0.238 | | 172 | 5 | 163.7868 | 0.08 | 1.0721 | 138.7556 | 24.921 | 14 * | | 49 | 8 | 825 | 1,422 |
| All other land , 100 acres or more (farms) | | * | * | | | * | * | | * | | | * | * | * | * | 1.3845 | 5 | | | | 6 | 7 |
| Land under Conservation Reserve or Wetlands Reserve Programs , Total farms | | | * | | | | * | | | | | * | * | | * | | | | | | 0 | 0 |
| , Cattle and calves inventory, total farms | 10 | 26.23235 | 164.0595 | 81 * | | 21 | 78 | 0.3276 * | | 231 | 11 | 243.6828 | 0.138 | 1.4768 | 207.2552 | 41.30425 | 14 | 6 | 84 | 8 | 1,228 | 2,088 |
| , Beef cow inventory, total farms | 9 | 24.500025 | 146.1621 | 78 * | | 18 | 75 | 0.2828 * | | 196 | 11 | 207.7296 | 0.118 | 1.3064 | 189.6912 | 35.997 | 14 | 6 | 73 | 7 | 1,093 | 1,846 |
| , Milk cow inventory, total farms | | * | * | * | * | | | 0.0126 | | 12 | | 6.9909 * | | 0.0994 | 4.391 | | | | 8 * | | 31 | 59 |
| , Cattle and calves sold, total farms | 6 | 21.530325 | 138.2077 | 77 * | | 20 | 70 | 0.2758 * | | 196 | 9 | 215.7192 | 0.116 | 1.278 | 182.6656 | 36.4585 | 13 | 6 | 77 | 6 | 1,076 | 1,808 |
| , Hogs and pigs inventory, total farms | * | | 8.9487 * | | | * | * | | | 5 | | 8.9883 | 0.005 * | * | * | 1.15375 * | | * | * | | 24 | 25 |
| , Hogs and pigs sold, total farms | * | | 6.9601 | | | * | * | | * | | | 10.9857 | 0.006 | 0.0355 * | * | * | * | * | * | | 18 | 24 |
| , Sheep and lambs inventory, total farms | * | 1.9798 * | | 6 | | * | | 0.014 | * | | | 11.9844 | 0.006 | 0.0426 | 6.1474 * | | | | * | | 26 | 52 |
| , Layers 20 weeks old and older inventory, total farms | | 2.47475 | 11.9316 | 5 | * | * | | 0.0238 | | 21 | | 16.9779 | 0.015 | 0.1491 | 7.9038 | 1.3845 | | | 6 * | | 73 | 130 |
| , Horses and ponies of all ages inventory, total farms | * | 11.631325 | 75.5668 | 34 * | | 6 | 31 | 0.1204 * | | 92 | 5 | 110.8557 | 0.068 | 0.6106 | 74.647 | 18.69075 | 7 | 6 | 21 | 6 | 500 | 849 |
| , Horses and ponies of all ages sold, total farms | | 4.207075 | 17.8974 | * | * | | 10 | 0.0196 | | 13 | | 18.9753 | 0.012 | 0.1207 | 11.4166 | 6.23025 * | * | | 7 * | | 89 | 145 |
| , Broilers and other meat type chickens sold, total farms | | 2.47475 | 15.9088 | 13 | | 6 | 17 | 0.084 | | 35 | | 21.9714 | 0.017 | 0.3053 | 32.4934 | 7.61475 * | * | | 5 * | | 157 | 316 |
| , Turkeys sold, total farms | * | | * | | | * | | 0.0098 | * | | | 4.9935 * | * | * | | 1.3845 * | | * | | | 6 | 17 |
| Corn for grain , Total farms | | | | | | | | | | | | * | | | | | | | | | 0 | 0 |
| All wheat for grain , Total farms | | | * | | | | * | | | | | * | | | * | | | | | | 0 | 0 |
| Rice, Total farms | | 1.237375 | | | | | | | | | | | | | | | | | | | 1 | 1 |
| Soybeans for beans , Total farms | | 1.237375 | | | | | * | | | | | | * | | * | | | | | | 1 | 1 |
| , Dry edible beans (excluding limas), total farms | | | | | | | | | | | | | | | | | | | | | 0 | 0 |
| Forage - Land used for all hay and all haylage, grass silage, and greenchop , Total farms | 14 | 18.065675 | 123.2932 | 70 * | | 19 | 71 | 0.2842 * | | 203 * | | 188.7543 | 0.085 | 1.3987 | 134.3646 | 26.767 | 12 | 5 | 61 | 7 | 955 | 1,674 |
| Forage - Land used for all hay and all haylage, grass silage, and greenchop , 1 to 49 acres (farms) | 7 | 11.8788 | 76.5611 | 40 * | | 9 | 51 | 0.1792 * | | 125 * | | 122.8401 | 0.066 | 0.8875 | 106.2622 | 17.0755 | 6 | 5 | 29 | 5 | 613 | 1,070 |
| Forage - Land used for all hay and all haylage, grass silage, and greenchop , 50 to 249 acres (farms) | 6 | 5.691925 | 44.7435 | 27 * | | 10 | 18 | 0.0966 * | | 76 * | | 60.9207 | 0.019 | 0.4828 | 25.4678 | 9.46075 | 6 | | 30 * | | 320 | 561 |
| Forage - Land used for all hay and all haylage, grass silage, and greenchop , 250 acres or more (farms) | * | * | * | | | * | | 0.0084 | * | | | 4.9935 | * | * | * | * | | * | | | 5 | 17 |
| Vegetables and melons for sale , Total farms | * | * | | | | * | * | | * | | * | * | * | * | | 1.15375 | | * | | | 1 | 1 |
| Land in orchards , Total farms | | 1.237375 | * | | | | * | * | * | | | * | | | 6.1474 * | | | | * | | 7 | 8 |
| Land in orchards , 0.1 to 14.9 acres (farms) | | 1.237375 | * | | | | | * | * | | | * | | | 5.2692 | | | | | | 7 | 7 |
| Land in orchards , 15.0 to 99.9 acres (farms) | | | | | | | * | | * | | | | | * | | | | | * | | 0 | 0 |
| , Berries, total farms | * | * | | | | * | * | | * | | * | | 0.009 * | * | * | | | | | | 0 | 2 |

TableBO: Oklahoma study area 2002 zip code census data showing county zip code and study area data

| | Adair County | | | | | | | Adair | Cherokee County | | | | | | | | | | | Cherokee |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Zip Code | 74338 | 74347 | 74457 | 74931 | 74960 | 74964 | 74965 | County | 74347 | 74359 | 74427 | 74451 | 74464 | 74465 | 74471 | 74931 | 74960 | 74962 | 74964 | County |
| Percent in County | 0.32% | 0.30% | 100.00% | 34.55% | 99.59% | 87.16% | 100.00% | Study Area | 2.03% | 29.58% | 100.00% | 100.00% | 99.98% | 100.00% | 100.00% | 61.26% | 0.41% | 0.13% | 0.00 | Study Area |
| Percent Relevant to Study Area | 50.00% | 100.00% | 100.00% | 50.00% | 50.00% | 100.00% | 100.00% | Total | 100.00% | 100.00% | 100.00% | 100.00% | 50.00% | 100.00% | 100.00% | 50.00% | 50.00% | 25.00% | 1.00 | Total |
| Farms by size , All farms | 0.52 | 0.26 | 45.00 | 11.06 | 289.81 | 108.08 | 311.00 | 766 | 1.73 | 3.55 | 11.00 | 68.00 | 265.95 | 56.00 | 72.00 | 19.60 | 1.19 | 0.06 | 0.42 | 500 |
| Farms by size , 1 to 49 acres | 0.17 | 0.05 | 5.00 | 2.07 | 82.16 | 34.86 | 91.00 | 215 | 0.35 * | | | 22.00 | 81.98 | 23.00 | 25.00 | 3.68 | 0.34 | 0.01 | 0.14 | 156 |
| Farms by size , 50 to 999 acres | 0.34 | 0.20 | 36.00 | 8.64 | 200.18 | 72.34 | 211.00 | 529 | 1.34 | 2.96 | 10.00 | 43.00 | 176.96 | 29.00 | 45.00 | 15.32 | 0.82 | 0.05 | 0.28 | 325 |
| Farms by size , 1,000 acres or more | * | * | * | * | 7.47 * | | 9.00 | 16 | * | * | * | * | 7.00 * | * | * | | 0.03 | 0.00 * | | 7 |
| Value of all agricultural products sold , Total farms | 0.52 | 0.26 | 45.00 | 11.06 | 289.81 | 108.08 | 311.00 | 766 | 1.73 | 3.55 | 11.00 | 68.00 | 265.95 | 56.00 | 72.00 | 19.60 | 1.19 | 0.06 | 0.42 | 500 |
| Value of all agricultural products sold , Less than $50,000 (farms) | 0.39 | 0.21 | 41.00 | 9.67 | 251.46 | 87.16 | 225.00 | 615 | 1.40 | 2.96 | 10.00 | 60.00 | 241.95 | 52.00 | 67.00 | 17.15 | 1.04 | 0.06 | 0.34 | 454 |
| Value of all agricultural products sold , $50,000 to $249,999 (farms) | 0.07 | 0.02 * | * | | 28.38 | 12.20 | 54.00 | 95 | 0.16 | * | | 6.00 | 12.00 * | * | * | | 0.12 | 0.00 | 0.05 | 18 |
| Value of all agricultural products sold , $250,000 or more (farms) | 0.05 | 0.02 * | * | | 9.96 | 8.72 | 32.00 | 51 | 0.16 * | | * | | 12.00 | * | * | | 0.04 * | | 0.03 | 12 |
| Value of all crops sold, including nursery and greenhouse , Total farms | 0.06 | 0.05 | 7.00 | 1.21 | 36.85 | 19.18 | 43.00 | 107 | 0.32 * | * | | 11.00 | 63.49 | 15.00 | 11.00 | 2.14 | 0.15 | 0.01 | 0.07 | 103 |
| Value of all crops sold, including nursery and greenhouse , Less than $50,000 (farms) | 0.06 | 0.05 | 6.00 | 1.21 | 32.86 | 19.18 | 43.00 | 102 | 0.32 * | * | | 9.00 | 59.49 | 15.00 | 9.00 | 2.14 | 0.14 | 0.01 | 0.07 | 95 |
| Value of all crops sold, including nursery and greenhouse , $50,000 to $249,999 (farms) | | * | | | 3.98 | | | 4 | | | | * | | * | | | 0.02 | 0.00 | | 0 |
| Value of sales grains, oilseeds, dry beans and dry peas , Total farms | | * | | * | | | | 0 | | | | * | | | | * | | 0.00 | | 0 |
| Value of sales grains, oilseeds, dry beans and dry peas , $50,000 or more (farms) | | | | | | | | 0 | | | | | | | | | | 0.00 | | 0 |
| Value of sales vegetables, melons, potatoes and sweetpotatoes , Total farms | | | | | 3.49 * | | | 3 | | | | * | | * | | | 0.01 * | * | | 0 |
| Value of sales vegetables, melons, potatoes and sweetpotatoes , $50,000 or more (farms) | | | | | 2.49 | | | 2 | | | | | | | | | 0.01 * | | | 0 |
| Value of sales fruits, tree nuts, and berries , Total farms | | * | | | 3.98 | | | 4 | | | | | 10.50 | 5.00 * | | | 0.02 * | | | 16 |
| Value of sales nursery, greenhouse, floriculture and sod , Total farms | | | | * | | | | 0 | | | * | | 5.00 | * | | * | * | | | 5 |
| Value of sales nursery, greenhouse, floriculture and sod , $50,000 or more (farms) | | | | | | | | 0 | | | * | | 3.00 | * | | | | | | 3 |
| Value of sales other crops and hay , Total farms | 0.06 | 0.05 | 6.00 | 1.21 | 31.37 | 18.30 | 43.00 | 100 | 0.32 * | * | | 9.00 | 50.49 | 12.00 | 7.00 | 2.14 | 0.13 | 0.01 | 0.07 | 81 |
| Value of all livestock, poultry and their products sold , Total farms | 0.42 | 0.18 | 37.00 | 8.46 | 204.66 | 71.47 | 259.00 | 581 | 1.22 | 2.66 | 5.00 | 54.00 | 191.96 | 35.00 | 53.00 | 15.01 | 0.84 | 0.04 | 0.28 | 359 |
| Value of all livestock, poultry and their products sold , Less than $50,000 (farms) | 0.30 | 0.13 | 34.00 | 7.08 | 173.78 | 50.55 | 176.00 | 442 | 0.89 | 2.07 * | | 48.00 | 171.97 | 31.00 | 50.00 | 12.56 | 0.72 | 0.04 | 0.20 | 317 |
| Value of all livestock, poultry and their products sold , $50,000 to $249,999 (farms) | 0.07 | 0.02 * | * | | 20.91 | 12.20 | 51.00 | 84 | 0.16 | * | | 6.00 | 10.00 * | * | * | | 0.09 * | | 0.05 | 16 |
| Value of all livestock, poultry and their products sold , $250,000 or more (farms) | 0.05 | 0.02 * | * | | 9.96 | 8.72 | 32.00 | 51 | 0.16 * | | | | 10.00 | * | * | | 0.04 * | | 0.03 | 10 |
| Value of sales hogs and pigs , Total farms | 0.03 * | * | * | | 5.98 | 4.36 | 6.00 | 16 | * | * | | 6.00 | 7.50 | | * | | 0.02 | 0.00 | 0.02 | 14 |
| Value of sales milk and other dairy products from cows , Total farms | 0.04 * | * | * | | 13.94 | 9.59 | 54.00 | 78 | * | | * | | 8.00 * | * | * | | 0.06 | | 0.04 | 8 |
| Value of sales milk and other dairy products from cows , $50,000 or more (farms) | 0.03 * | * | * | | 12.45 | 8.72 | 51.00 | 72 | * | | | | 6.50 * | * | * | | 0.05 | | 0.03 | 7 |
| Value of sales cattle and calves , Total farms | 0.36 | 0.15 | 29.00 | 6.39 | 181.25 | 60.14 | 237.00 | 514 | 1.04 | 2.66 | 5.00 | 41.00 | 167.47 | 32.00 | 45.00 | 11.33 | 0.75 | 0.04 | 0.23 | 307 |
| Value of sales cattle and calves , $50,000 or more (farms) | 0.03 | 0.02 * | * | | 9.96 * | | 11.00 | 21 | 0.16 * | * | * | | 9.00 * | * | * | | 0.04 * | * | | 9 |
| Value of sales sheep, goats and their products , Total farms | 0.01 * | | 6.00 | 1.38 | 13.44 * | | 5.00 | 26 | * | * | | 6.00 | 10.50 * | | 7.00 | 2.45 | 0.06 | 0.00 * | | 26 |
| Value of sales horses, ponies, mules, burros and donkeys , Total farms | 0.04 | 0.03 * | | 1.55 | 18.92 | 5.23 | 23.00 | 49 | 0.22 * | | | 6.00 | 22.50 | 5.00 | 7.00 | 2.76 | 0.08 | 0.00 | 0.02 | 44 |
| Value of sales poultry and eggs , Total farms | 0.08 | 0.02 | | 1.04 | 21.91 | 9.59 | 31.00 | 64 | 0.12 | | | 5.00 | 18.50 * | | 5.00 | 1.84 | 0.09 * | | 0.04 | 31 |
| Value of sales poultry and eggs , $50,000 or more (farms) | 0.07 | 0.02 | | 0.86 | 13.94 | 6.97 | 28.00 | 50 | 0.12 | | | | 7.00 | | | 1.53 | 0.06 * | | 0.03 | 9 |
| Value of sales other animals and other animal products , Total farms | * | * | | | 2.99 | | | 3 | | | | | | * | | | 0.01 * | | | 0 |
| Farms by tenure , Full owners | 0.37 | 0.20 | 36.00 | 8.29 | 204.66 | 74.96 | 215.00 | 539 | 1.38 | 1.77 | 5.00 | 48.00 | 191.96 | 37.00 | 48.00 | 14.70 | 0.84 | 0.04 | 0.29 | 349 |
| Farms by tenure , Part owners | 0.13 | 0.05 | 7.00 | 2.59 | 74.19 | 32.25 | 89.00 | 205 | 0.35 | 1.77 | 6.00 | 18.00 | 65.49 | 17.00 | 20.00 | 4.59 | 0.31 | 0.02 | 0.13 | 134 |
| Farms by tenure , Tenants | 0.01 | * | * | | 10.95 * | | 7.00 | 18 | | | * | | 8.50 * | * | * | | 0.05 | 0.00 * | | 9 |
| , Farms with one operator | 0.28 | 0.16 | 34.00 | 6.91 | 174.28 | 53.17 | 200.00 | 469 | 1.06 | 2.07 | 6.00 | 33.00 | 141.97 | 29.00 | 39.00 | 12.25 | 0.72 | 0.04 | 0.21 | 265 |
| , Farms with multiple operators | 0.23 | 0.10 | 11.00 | 4.15 | 115.52 | 54.91 | 111.00 | 297 | 0.67 | 1.48 | 5.00 | 35.00 | 123.98 | 27.00 | 33.00 | 7.35 | 0.48 | 0.02 | 0.21 | 234 |
| , Farms with women operators | 0.24 | 0.09 | 9.00 | 4.66 | 118.51 | 58.40 | 125.00 | 316 | 0.63 | 1.48 | 5.00 | 30.00 | 127.47 | 28.00 | 29.00 | 8.27 | 0.49 | 0.02 | 0.23 | 231 |
| , Farms with principal operator living on the farm operated | 0.49 | 0.23 | 43.00 | 10.19 | 259.43 | 104.59 | 278.00 | 696 | 1.52 | 2.96 | 11.00 | 57.00 | 240.45 | 45.00 | 64.00 | 18.07 | 1.07 | 0.06 | 0.41 | 442 |
| , Farms with principal operator reporting primary occupation as farming | 0.29 | 0.13 | 30.00 | 6.56 | 155.86 | 50.55 | 185.00 | 428 | 0.89 | 2.96 | 6.00 | 30.00 | 159.97 | 15.00 | 46.00 | 11.64 | 0.64 | 0.04 | 0.20 | 273 |
| , Farms with principal operator reporting working off the farm for 200 days or more | 0.22 | 0.11 | 17.00 | 4.66 | 138.93 | 55.78 | 131.00 | 348 | 0.77 * | | 5.00 | 28.00 | 104.98 | 40.00 | 35.00 | 8.27 | 0.57 | 0.03 | 0.22 | 223 |
| , Farms with farm-related sources of income | 0.06 | 0.04 * | | 1.90 | 48.80 | 9.59 | 56.00 | 116 | 0.24 * | * | | 19.00 | 50.49 | 9.00 | 12.00 | 3.37 | 0.20 | 0.01 | 0.04 | 94 |
| , Farms with production contracts | 0.07 | 0.02 | | 0.86 | 13.94 | 9.59 | 26.00 | 50 | 0.12 | | | | 7.00 | | | 1.53 | 0.06 * | | 0.04 | 9 |
| , Farms with direct sales | * | * | | | 4.48 * | | 8.00 | 12 | | * | | 6.00 | 6.50 | * | | | 0.02 * | * | | 13 |
| , Farms with grain storage capacity | * | * | | | 6.47 | * | | 6 | * | * | | | 2.50 * | * | | | 0.03 | 0.00 | | 3 |
| Payments received from Federal Farm Programs , Total farms | 0.08 | 0.06 | 8.00 | 2.25 | 45.81 | 21.79 | 90.00 | 168 | 0.39 * | * | | 15.00 | 49.49 * | | 14.00 | 3.98 | 0.19 | 0.01 | 0.09 | 83 |
| Payments received from Federal Farm Programs , Less than $50,000 (farms) | 0.08 | 0.06 | 8.00 | 2.25 | 45.81 | 21.79 | 90.00 | 168 | 0.39 * | * | | 15.00 | 49.49 * | | 14.00 | 3.98 | 0.19 | 0.01 | 0.09 | 83 |
| Cropland harvested , Total farms | 0.30 | 0.16 | 25.00 | 6.91 | 159.84 | 54.91 | 191.00 | 438 | 1.08 | 2.37 * | | 28.00 | 144.97 | 34.00 | 40.00 | 12.25 | 0.66 | 0.04 | 0.21 | 264 |
| Cropland harvested , 1 to 49 acres (farms) | 0.16 | 0.08 | 14.00 | 3.63 | 100.09 | 29.63 | 96.00 | 244 | 0.57 * | * | | 18.00 | 91.48 | 23.00 | 23.00 | 6.43 | 0.41 | 0.02 | 0.12 | 163 |
| Cropland harvested , 50 to 499 acres (farms) | 0.13 | 0.08 | 9.00 | 3.28 | 59.26 | 25.28 | 91.00 | 188 | 0.51 | 1.48 * | | 10.00 | 51.99 | 10.00 | 15.00 | 5.82 | 0.24 | 0.02 | 0.10 | 95 |
| Cropland harvested , 500 acres or more (farms) | | * | | * | | * | | 0 | | | | * | * | * | | * | | 0.00 | | 0 |
| , Cropland used for pasture or grazing, total farms | 0.22 | 0.11 | 28.00 | 6.22 | 154.86 | 61.01 | 151.00 | 401 | 0.75 | | 9.00 | 30.00 | 118.98 | 23.00 | 25.00 | 11.03 | 0.64 | 0.02 | 0.24 | 219 |
| , Cropland idle or used for cover crops or soil-improvement but NOT harvested and NOT pastured or grazed, total farms | 0.02 * | | 5.00 | 1.04 | 17.93 | 6.97 | 19.00 | 50 | * | * | * | | 15.00 | 6.00 * | | 1.84 | 0.07 | 0.00 | 0.03 | 23 |
| , Cropland on which all crops failed or were abandoned, total farms | 0.02 | | | * | 6.47 | | 5.00 | 11 | | * | * | | 5.50 | * | * | | 0.03 | 0.00 | | 6 |
| , Cropland in cultivated summer fallow, total farms | | | | | 3.49 | * | | 3 | | * | | * | | | | | 0.01 * | | | 0 |
| , Total woodland, total farms | 0.25 | 0.13 | 31.00 | 7.43 | 167.81 | 44.45 | 137.00 | 388 | 0.85 * | | 7.00 | 35.00 | 126.47 | 33.00 | 39.00 | 13.17 | 0.69 | 0.03 | 0.17 | 255 |
| Permanent pasture and rangeland , Total farms | 0.26 | 0.14 | 27.00 | 5.01 | 158.35 | 44.45 | 161.00 | 396 | 0.91 | 2.96 | 7.00 | 35.00 | 142.47 | 23.00 | 38.00 | 8.88 | 0.65 | 0.03 | 0.17 | 259 |
| Permanent pasture and rangeland , 100 acres or more (farms) | 0.05 | 0.08 | 12.00 | 1.73 | 39.84 | 10.46 | 45.00 | 109 | 0.53 | 1.48 * | | 8.00 | 44.49 | 9.00 | 8.00 | 3.06 | 0.16 | 0.01 | 0.04 | 75 |
| All other land , Total farms | 0.27 | 0.13 | 23.00 | 4.84 | 126.48 | 50.55 | 132.00 | 337 | 0.87 | 1.77 * | | 32.00 | 128.97 | 29.00 | 31.00 | 8.58 | 0.52 | 0.03 | 0.20 | 233 |
| All other land , 100 acres or more (farms) | 0.01 | | | | 3.98 | 4.36 * | | 8 | | | * | | 4.50 * | * | | | 0.02 | | 0.02 | 5 |
| Land under Conservation Reserve or Wetlands Reserve Programs , Total farms | | * | | | 2.49 | | 9.00 | 11 | | | | | 2.50 | | | | 0.01 | | | 3 |
| , Cattle and calves inventory, total farms | 0.41 | 0.18 | 32.00 | 8.29 | 228.06 | 81.93 | 263.00 | 614 | 1.22 | 2.66 | 7.00 | 51.00 | 194.46 | 38.00 | 58.00 | 14.70 | 0.94 | 0.05 | 0.32 | 368 |
| , Beef cow inventory, total farms | 0.35 | 0.15 | 30.00 | 6.56 | 197.69 | 74.09 | 194.00 | 503 | 0.99 | 2.07 | 5.00 | 47.00 | 163.97 | 34.00 | 48.00 | 11.64 | 0.81 | 0.04 | 0.29 | 314 |
| , Milk cow inventory, total farms | 0.04 * | * | * | | 16.43 | 9.59 | 53.00 | 79 | * | * | * | | 12.50 * | * | * | | 0.07 * | | 0.04 | 13 |
| , Cattle and calves sold, total farms | 0.36 | 0.15 | 29.00 | 6.39 | 181.25 | 60.14 | 237.00 | 514 | 1.04 | 2.66 | 5.00 | 41.00 | 167.47 | 32.00 | 45.00 | 11.33 | 0.75 | 0.04 | 0.23 | 307 |
| , Hogs and pigs inventory, total farms | 0.03 * | * | * | | 7.47 * | | 8.00 | 15 | * | | | 6.00 | 6.50 * | | * | | 0.03 | 0.00 * | | 13 |
| , Hogs and pigs sold, total farms | 0.03 * | * | * | | 5.98 | 4.36 | 6.00 | 16 | * | * | | 6.00 | 7.50 | | * | | 0.02 | 0.00 | 0.02 | 14 |
| , Sheep and lambs inventory, total farms | * | * | | 1.04 | 4.48 * | * | | 6 | * | | | 5.00 | 8.00 * | | 6.00 | 1.84 | 0.02 * | * | | 21 |
| , Layers 20 weeks old and older inventory, total farms | 0.04 * | * | | 1.21 | 14.44 | 6.10 | 10.00 | 32 | * | | | 7.00 | 15.00 * | | 11.00 | 2.14 | 0.06 | 0.00 | 0.02 | 35 |
| , Horses and ponies of all ages inventory, total farms | 0.18 | 0.11 | 24.00 | 4.84 | 81.66 | 39.22 | 101.00 | 251 | 0.75 | 1.77 * | | 28.00 | 101.98 | 20.00 | 27.00 | 8.58 | 0.34 | 0.03 | 0.15 | 189 |
| , Horses and ponies of all ages sold, total farms | 0.04 | 0.03 * | | 1.55 | 18.42 | 5.23 | 23.00 | 48 | 0.22 * | | | 6.00 | 22.50 | 5.00 | 6.00 | 2.76 | 0.08 | 0.00 | 0.02 | 43 |
| , Broilers and other meat type chickens sold, total farms | 0.04 * | | | 0.86 | 11.45 * | | 17.00 | 29 | * | | | | 4.50 | | | 1.53 | 0.05 | * | | 6 |
| , Turkeys sold, total farms | * | | | | * | * | | 0 | * | | | | 3.00 | | | * | | * | | 3 |
| Corn for grain , Total farms | | | | | | | | 0 | | | | * | | | | | | 0.00 | | 0 |
| All wheat for grain , Total farms | | * | | * | | | | 0 | | | | * | | | | * | | 0.00 | | 0 |
| Soybeans for beans , Total farms | | | | | | | | 0 | | | | * | | | | | | 0.00 | | 0 |
| Soybeans for beans , 250 acres or more (farms) | | | | | | | | 0 | | | | | | | | | | 0.00 | | 0 |
| , Dry edible beans (excluding limas), total farms | | | | | | | | 0 | | | | | | | | | | | | 0 |
| Forage - Land used for all hay and all haylage, grass silage, and greenchop , Total farms | 0.30 | 0.16 | 25.00 | 6.91 | 154.36 | 54.04 | 191.00 | 432 | 1.08 | 2.37 * | | 26.00 | 135.97 | 34.00 | 36.00 | 12.25 | 0.64 | 0.04 | 0.21 | 249 |
| Forage - Land used for all hay and all haylage, grass silage, and greenchop , 1 to 49 acres (farms) | 0.16 | 0.08 | 14.00 | 3.63 | 96.60 | 28.76 | 99.00 | 242 | 0.57 * | * | | 18.00 | 83.98 | 23.00 | 19.00 | 6.43 | 0.40 | 0.02 | 0.11 | 152 |
| Forage - Land used for all hay and all haylage, grass silage, and greenchop , 50 to 249 acres (farms) | 0.13 | 0.07 | 8.00 | 3.11 | 51.79 | 25.28 | 84.00 | 172 | 0.47 | 1.48 * | | 8.00 | 47.99 | 10.00 | 14.00 | 5.51 | 0.21 | 0.02 | 0.10 | 88 |
| Forage - Land used for all hay and all haylage, grass silage, and greenchop , 250 acres or more (farms) | * | * | * | | 5.98 | | 8.00 | 14 | * | | | | 4.00 * | * | * | | 0.02 * | | | 4 |
| Vegetables and melons for sale , Total farms | | | | | 3.49 * | | | 3 | | | | * | | * | | | 0.01 * | * | | 0 |
| Land in orchards , Total farms | * | * | * | * | | | | 0 | | | | | 7.50 | 6.00 * | * | * | * | | | 13 |
| Land in orchards , 0.1 to 14.9 acres (farms) | * | * | * | * | | | | 0 | | | | | 5.00 | 6.00 * | * | * | * | | | 11 |
| Land in orchards , 15.0 to 99.9 acres (farms) | * | | | * | | | | 0 | | | | | 2.50 | | | * | | | | 2 |
| , Berries, total farms | | | | | 3.49 | | | 3 | | | | | 3.00 | | | | 0.01 | | | 3 |

TableBO: Oklahoma study area 2002 zip code census data showing county zip code and study

| | Delaware County | | | | | Delaware | Sequoyah County | | | Sequoyah | Study |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Zip Code | 74338 | 74347 | 74359 | 74464 | 74964 | County | 74435 | 74931 | 74962 | County | Area |
| Percent in County | 99.68% | 97.66% | 70.42% | 0.02% | 12.50% | Study Area | 89.31% | 4.19% | 99.87% | Study Area | Total |
| Percent Relevant to Study Area | 50.00% | 100.00% | 100.00% | 50.00% | 100.00% | Total | 75.00% | 50.00% | 25.00% | Total | |
| Farms by size , All farms | 160.48 | 83.01 | 8.45 | 0.05 | 15.50 | 267 | 67.65 | 1.34 | 48.69 | 118 | 1,650 |
| Farms by size , 1 to 49 acres | 52.33 | 16.60 * | | 0.02 | 5.00 | 74 | 17.42 | 0.25 | 8.24 | 26 | 472 |
| Farms by size , 50 to 999 acres | 106.66 | 64.46 | 7.04 | 0.04 | 10.38 | 189 | 46.22 | 1.05 | 38.70 | 86 | 1,128 |
| Farms by size , 1,000 acres or more | * | * | | 0.00 * | | 0 | 4.02 * | | 1.75 | 6 | 29 |
| Value of all agricultural products sold , Total farms | 160.48 | 83.01 | 8.45 | 0.05 | 15.50 | 267 | 67.65 | 1.34 | 48.69 | 118 | 1,650 |
| Value of all agricultural products sold , Less than $50,000 (farms) | 121.61 | 67.39 | 7.04 | 0.05 | 12.50 | 209 | 64.30 | 1.17 | 45.94 | 111 | 1,389 |
| Value of all agricultural products sold , $50,000 to $249,999 (farms) | 21.93 | 7.81 | | 0.00 | 1.75 | 31 | * | * | 2.25 | 2 | 147 |
| Value of all agricultural products sold , $250,000 or more (farms) | 16.95 | 7.81 * | | 0.00 | 1.25 | 26 | * | * | * | 0 | 89 |
| Value of all crops sold, including nursery and greenhouse , Total farms | 19.44 | 15.63 * | | 0.01 | 2.75 | 38 | 11.39 | 0.15 | 10.74 | 22 | 271 |
| Value of all crops sold, including nursery and greenhouse , Less than $50,000 (farms) | 19.44 | 15.63 * | | 0.01 | 2.75 | 38 | 9.38 | 0.15 | 9.24 | 19 | 254 |
| Value of all crops sold, including nursery and greenhouse , $50,000 to $249,999 (farms) | | | * | | | 0 | * | | 1.25 | 1 | 5 |
| Value of sales grains, oilseeds, dry beans and dry peas , Total farms | | | * | | | 0 | 3.35 | | 2.25 | 6 | 6 |
| Value of sales grains, oilseeds, dry beans and dry peas , $50,000 or more (farms) | | | | | | 0 | * | | 1.25 | 1 | 1 |
| Value of sales vegetables, melons, potatoes and sweetpotatoes , Total farms | | | * | * | | 0 | | * | | 0 | 4 |
| Value of sales vegetables, melons, potatoes and sweetpotatoes , $50,000 or more (farms) | | | | | | 0 | | * | | 0 | 3 |
| Value of sales fruits, tree nuts, and berries , Total farms | | | | 0.00 | | 0 | | * | | 0 | 20 |
| Value of sales nursery, greenhouse, floriculture and sod , Total farms | | | | 0.00 | | 0 | | * | | 0 | 5 |
| Value of sales nursery, greenhouse, floriculture and sod , $50,000 or more (farms) | | | | 0.00 | | 0 | | | | 0 | 3 |
| Value of sales other crops and hay , Total farms | 19.44 | 15.63 * | | 0.01 | 2.63 | 38 | 8.04 | 0.15 | 7.74 | 16 | 235 |
| Value of all livestock, poultry and their products sold , Total farms | 131.58 | 58.60 | 6.34 | 0.04 | 10.25 | 207 | 46.89 | 1.03 | 33.21 | 81 | 1,228 |
| Value of all livestock, poultry and their products sold , Less than $50,000 (farms) | 92.70 | 42.97 | 4.93 | 0.03 | 7.25 | 148 | 45.55 | 0.86 | 31.96 | 78 | 986 |
| Value of all livestock, poultry and their products sold , $50,000 to $249,999 (farms) | 22.43 | 7.81 | | 0.00 | 1.75 | 32 | * | * | * | 0 | 132 |
| Value of all livestock, poultry and their products sold , $250,000 or more (farms) | 16.45 | 7.81 * | | 0.00 | 1.25 | 26 | | * | * | 0 | 86 |
| Value of sales hogs and pigs , Total farms | 8.47 * | | | 0.00 | 0.63 | 9 | * | * | 1.25 | 1 | 40 |
| Value of sales milk and other dairy products from cows , Total farms | 11.46 * | | | 0.00 | 1.38 | 13 | | * | | 0 | 99 |
| Value of sales milk and other dairy products from cows , $50,000 or more (farms) | 9.97 * | | | 0.00 | 1.25 | 11 | | * | | 0 | 90 |
| Value of sales cattle and calves , Total farms | 112.64 | 49.81 | 6.34 | 0.03 | 8.63 | 177 | 44.88 | 0.78 | 30.21 | 76 | 1,074 |
| Value of sales cattle and calves , $50,000 or more (farms) | 8.47 | 7.81 * | | 0.00 * | | 16 | | * | * | 0 | 46 |
| Value of sales sheep, goats and their products , Total farms | 3.99 * | | | 0.00 * | | 4 | * | 0.17 | 1.75 | 2 | 58 |
| Value of sales horses, ponies, mules, burros and donkeys , Total farms | 11.96 | 10.74 * | | 0.00 | 0.75 | 23 | * | 0.19 | 3.75 | 4 | 120 |
| Value of sales poultry and eggs , Total farms | 24.42 | 5.86 | | 0.00 | 1.38 | 32 | * | 0.13 * | | 0 | 126 |
| Value of sales poultry and eggs , $50,000 or more (farms) | 21.43 | 5.86 | | 0.00 | 1.00 | 28 | | 0.10 * | | 0 | 87 |
| Value of sales other animals and other animal products , Total farms | * | | | | | 0 | * | | * | 0 | 3 |
| Farms by tenure , Full owners | 114.13 | 66.41 | 4.23 | 0.04 | 10.75 | 196 | 45.55 | 1.01 | 27.46 | 74 | 1,158 |
| Farms by tenure , Part owners | 41.87 | 16.60 | 4.23 | 0.01 | 4.63 | 67 | 20.09 | 0.31 | 18.48 | 39 | 445 |
| Farms by tenure , Tenants | 4.49 | | | 0.00 * | | 4 | * | * | 2.75 | 3 | 34 |
| , Farms with one operator | 88.72 | 50.78 | 4.93 | 0.03 | 7.63 | 152 | 34.16 | 0.84 | 31.46 | 66 | 953 |
| , Farms with multiple operators | 71.77 | 32.23 | 3.52 | 0.02 | 7.88 | 115 | 33.49 | 0.50 | 17.23 | 51 | 698 |
| , Farms with women operators | 76.26 | 30.27 | 3.52 | 0.03 | 8.38 | 118 | 28.80 | 0.57 | 18.73 | 48 | 713 |
| , Farms with principal operator living on the farm operated | 151.51 | 73.25 | 7.04 | 0.05 | 15.00 | 247 | 58.27 | 1.24 | 44.44 | 104 | 1,488 |
| , Farms with principal operator reporting primary occupation as farming | 90.71 | 42.97 | 7.04 | 0.03 | 7.25 | 148 | 34.16 | 0.80 | 29.71 | 65 | 914 |
| , Farms with principal operator reporting working off the farm for 200 days or more | 69.78 | 37.11 * | | 0.02 | 8.00 | 115 | 32.82 | 0.57 | 21.22 | 55 | 740 |
| , Farms with farm-related sources of income | 17.44 | 11.72 * | | 0.01 | 1.38 | 31 | 3.35 | 0.23 | 7.74 | 11 | 253 |
| , Farms with production contracts | 22.93 | 5.86 | | 0.00 | 1.38 | 30 | | 0.10 * | | 0 | 89 |
| , Farms with direct sales | * | | | 0.00 * | | 0 | * | | * | 0 | 25 |
| , Farms with grain storage capacity | | * | | 0.00 | | 0 | * | | 2.50 | 2 | 12 |
| Payments received from Federal Farm Programs , Total farms | 25.42 | 18.56 * | | 0.01 | 3.13 | 47 | 12.06 | 0.27 | 8.24 | 21 | 319 |
| Payments received from Federal Farm Programs , Less than $50,000 (farms) | 25.42 | 18.56 * | | 0.01 | 3.13 | 47 | 12.06 | 0.27 | 8.24 | 21 | 319 |
| Cropland harvested , Total farms | 92.20 | 51.76 | 5.63 | 0.03 | 7.88 | 158 | 34.16 | 0.84 | 32.21 | 67 | 926 |
| Cropland harvested , 1 to 49 acres (farms) | 50.34 | 27.34 * | | 0.02 | 4.25 | 82 | 13.40 | 0.44 | 16.23 | 30 | 519 |
| Cropland harvested , 50 to 499 acres (farms) | 41.87 | 24.42 | 3.52 | 0.01 | 3.63 | 73 | 18.76 | 0.40 | 14.73 | 34 | 391 |
| Cropland harvested , 500 acres or more (farms) | | | * | | | 0 | * | | 1.25 | 1 | 1 |
| , Cropland used for pasture or grazing, total farms | 68.28 | 36.13 | | 0.02 | 8.75 | 113 | 31.48 | 0.75 | 18.73 | 51 | 784 |
| , Cropland idle or used for cover crops or soil-improvement but NOT harvested and NOT pastured or grazed, total farms | 5.98 * | | | 0.00 | 1.00 | 7 | 6.03 | 0.13 | 2.00 | 8 | 88 |
| , Cropland on which all crops failed or were abandoned, total farms | 5.48 | | | 0.00 | | 5 | * | * | 1.75 | 2 | 24 |
| , Cropland in cultivated summer fallow, total farms | | | * | | | 0 | | | * | 0 | 4 |
| , Total woodland, total farms | 77.75 | 41.02 * | | 0.03 | 6.38 | 125 | 29.47 | 0.90 | 22.97 | 53 | 822 |
| Permanent pasture and rangeland , Total farms | 82.24 | 43.95 | 7.04 | 0.03 | 6.38 | 140 | 26.12 | 0.61 | 24.47 | 51 | 846 |
| Permanent pasture and rangeland , 100 acres or more (farms) | 16.45 | 25.39 | 3.52 | 0.01 | 1.50 | 47 | 6.70 | 0.21 | 10.49 | 17 | 248 |
| All other land , Total farms | 83.23 | 41.99 | 4.23 | 0.03 | 7.25 | 137 | 24.11 | 0.59 | 19.72 | 44 | 751 |
| All other land , 100 acres or more (farms) | 3.49 | | | 0.00 | 0.63 | 4 | * | | | 0 | 17 |
| Land under Conservation Reserve or Wetlands Reserve Programs , Total farms | | | | 0.00 | | 0 | * | | | 0 | 14 |
| , Cattle and calves inventory, total farms | 126.59 | 58.60 | 6.34 | 0.04 | 11.75 | 203 | 54.93 | 1.01 | 34.95 | 91 | 1,276 |
| , Beef cow inventory, total farms | 108.65 | 47.85 | 4.93 | 0.03 | 10.63 | 172 | 50.24 | 0.80 | 30.21 | 81 | 1,070 |
| , Milk cow inventory, total farms | 12.96 * | | | 0.00 | 1.38 | 14 | * | * | * | 0 | 106 |
| , Cattle and calves sold, total farms | 112.64 | 49.81 | 6.34 | 0.03 | 8.63 | 177 | 44.88 | 0.78 | 30.21 | 76 | 1,074 |
| , Hogs and pigs inventory, total farms | 8.47 * | | | 0.00 * | | 8 | * | * | 1.75 | 2 | 38 |
| , Hogs and pigs sold, total farms | 8.47 * | | | 0.00 | 0.63 | 9 | * | * | 1.25 | 1 | 40 |
| , Sheep and lambs inventory, total farms | * | * | | 0.00 * | | 0 | * | 0.13 * | | 0 | 27 |
| , Layers 20 weeks old and older inventory, total farms | 12.46 * | | | 0.00 | 0.88 | 13 | 4.69 | 0.15 | 2.25 | 7 | 87 |
| , Horses and ponies of all ages inventory, total farms | 54.82 | 36.13 | 4.23 | 0.02 | 5.63 | 101 | 18.76 | 0.59 | 20.97 | 40 | 581 |
| , Horses and ponies of all ages sold, total farms | 11.96 | 10.74 * | | 0.00 | 0.75 | 23 | * | 0.19 | 3.75 | 4 | 118 |
| , Broilers and other meat type chickens sold, total farms | 13.96 * | | | 0.00 * | | 14 | | 0.10 | | 0 | 50 |
| , Turkeys sold, total farms | * | * | | 0.00 * | | 0 | | | | 0 | 3 |
| Corn for grain , Total farms | | | * | | | 0 | * | | 1.25 | 1 | 1 |
| All wheat for grain , Total farms | | | * | | | 0 | | | 1.25 | 1 | 1 |
| Soybeans for beans , Total farms | | | * | | | 0 | 3.35 | | 2.25 | 6 | 6 |
| Soybeans for beans , 250 acres or more (farms) | | | | | | 0 | 3.35 | | 1.75 | 5 | 5 |
| , Dry edible beans (excluding limas), total farms | | | | | | 0 | | | | 0 | 0 |
| Forage - Land used for all hay and all haylage, grass silage, and greenchop , Total farms | 92.20 | 51.76 | 5.63 | 0.03 | 7.75 | 157 | 30.81 | 0.84 | 29.96 | 62 | 899 |
| Forage - Land used for all hay and all haylage, grass silage, and greenchop , 1 to 49 acres (farms) | 50.84 | 27.34 * | | 0.02 | 4.13 | 82 | 13.40 | 0.44 | 16.23 | 30 | 506 |
| Forage - Land used for all hay and all haylage, grass silage, and greenchop , 50 to 249 acres (farms) | 39.87 | 22.46 | 3.52 | 0.01 | 3.63 | 69 | 17.42 | 0.38 | 13.23 | 31 | 361 |
| Forage - Land used for all hay and all haylage, grass silage, and greenchop , 250 acres or more (farms) | * | * | | 0.00 | | 0 | | * | * | 0 | 18 |
| Vegetables and melons for sale , Total farms | | | * | * | | 0 | | | * | 0 | 4 |
| Land in orchards , Total farms | * | | | 0.00 | | 0 | * | * | * | 0 | 14 |
| Land in orchards , 0.1 to 14.9 acres (farms) | * | | | 0.00 | | 0 | * | * | * | 0 | 11 |
| Land in orchards , 15.0 to 99.9 acres (farms) | * | | | 0.00 | | 0 | | | | 0 | 3 |
| , Berries, total farms | | | | 0.00 | | 0 | | | | 0 | 7 |

# Appendix C

## Animal Manure Production and Composition Expressed as Animal Units

Table C: Estimates of manure and its constituents by different types of animals that exist in the IRW.

**Table C-1: Estimates of manure and its constituents by different types of animals that exist in the IRW.**

| | Manure Wt lb/d/1000# | Volume $ft^3$/d/1000# | Moisture % | Total Solids | N | P | K | Total coliform produced ($x10^{10}$ cfu/1000#-day | Fecal coliform produced ($x10^{10}$ cfu/1000#-day | Fecal streptococcus produced ($x10^{10}$ cfu/1000#-day |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | lb/d/1000# | | | | | | |
| * Dairy Animals | | | | | | | | | | |
| Lactating Cow | 86.00 | | 87.50% | 12.00 | 0.450 | 0.094 | 0.290 | 500.0000 | 7.2000 | 42.0000 |
| Dry Cow | 86.00 | | 88.40% | 12.00 | 0.450 | 0.094 | 0.290 | 500.0000 | 7.2000 | 42.0000 |
| Heifer | 86.00 | | 89.30% | 12.00 | 0.450 | 0.094 | 0.290 | 500.0000 | 7.2000 | 42.0000 |
| Milking Center | | | | | | | | | | |
| House,Parlor, Holding Area | | | | | | | | | | |
| * Beef Animals | | | | | | | | | | |
| 750-1100 # , feeder,yrlg | | | | | | | | | | |
| High forage diet | 58.00 | | 88.40% | 8.50 | 0.340 | 0.092 | 0.210 | 29.0000 | 13.0000 | 14.0000 |
| High energy diet | | | 88.40% | | | | | | | |
| 450 to 750 # | 58.00 | | 87.00% | 8.50 | 0.340 | 0.092 | 0.210 | 29.0000 | 13.0000 | 14.0000 |
| Cow | 58.00 | | 88.40% | 8.50 | 0.340 | 0.092 | 0.210 | 29.0000 | 13.0000 | 14.0000 |
| * Swine animals | | | | | | | | | | |
| Grower, 40-220 lb | 84.00 | | 90.00% | 11.00 | 0.52 | 0.18 | 0.29 | 21.0000 | 8.0000 | 240.0000 |
| Replacement gilt | 84.00 | | 90.00% | 11.00 | 0.52 | 0.18 | 0.29 | 21.0000 | 8.0000 | 240.0000 |
| Sow, Gestation | 84.00 | | 90.80% | 11.00 | 0.52 | 0.18 | 0.29 | 21.0000 | 8.0000 | 240.0000 |
| Nursing/nursery pig, 0-40 lb | 84.00 | | 90.00% | 11.00 | 0.52 | 0.18 | 0.29 | 21.0000 | 8.0000 | 240.0000 |
| Sow, Lactation | 84.00 | | 90.00% | 11.00 | 0.52 | 0.18 | 0.29 | 21.0000 | 8.0000 | 240.0000 |
| * Sheep Animals | | | | | | | | | | |
| Lamb | 40.00 | | 75.00% | 11.00 | 0.42 | 0.09 | 0.32 | 9.0000 | 20.0000 | 28.0000 |
| * Equine | | | | | | | | | | |
| Horse | 51.00 | | 78.00% | 15.00 | 0.30 | 0.07 | 0.25 | 220.0000 | 0.0420 | 26.0000 |
| Rabbits | | | | | | | | | 0.5000 | |
| ** Whitetail Deer | | | | | | | | | | |
| Deer | 40.00 | 0.63 | 75.00% | 10.00 | 0.45 | 0.07 | 0.30 | | 0.5000 | |
| ** Wild Turkeys | | | | | | | | | | |
| Turkeys | 47.00 | | 74.47% | 12.00 | 0.62 | 0.23 | 0.24 | | 0.6200 | |
| * Broilers | 85.00 | | 75.00% | 22.00 | 1.1 | 0.30 | 0.40 | | 6.0444 | |
| * Turkey | 47.00 | | 75.00% | 12.00 | 0.62 | 0.23 | 0.24 | | 0.6200 | |
| *** Pullet | 45.60 | | 75.00% | 11.40 | 0.62 | 0.24 | 0.26 | | | |
| * Broiler breeder\Layer | 64.00 | | 75.00% | 16.00 | 0.84 | 0.30 | 0.30 | 50.0000 | 3.4000 | 7.4000 |
| ** Wild Ducks | 110.00 | | 71.82% | 31.00 | 1.5 | 0.54 | 0.71 | | 121.5000 | 270.0000 |
| ** Geese | 50.00 | | | | 0.4067 | 0.1533 | | | 653.3333 | |

* Source: American Society of Agricultural Engineers, D384.1 FEB03
** Source: Various articles and conversations with wildlife professionals
*** Source: USDA-Soil Conservation Service, Agricultural Waste Management Handbook, Chapter 4, Agricultural Waste Characteristics

Case 4:05-cv-00329-GKF-PJC Document 2061-2 Filed in USDC ND/OK on 05/18/2009 Page 27 of 44

**Table C-2: Estimates of manure and its constituents by different types of animals that exist in the IRW.**

| | Animal Units | | Per Animal | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | An Count | AU Days | Wet Manure Weight, Tons Annually | N, DRY LBS, Annually | P, DRY LBS, Annually | K, DRY LBS Annually | Total coliforn, $x10^{10}$ cfu Annually | Fecal coliforn, $x10^{10}$ cfu Annually | Fecal streptococcus, $x10^{10}$ cfu Annually | Animal Weight | |
| Porportion in Cow Unit | 1.00 | 305.00 | 13.15 | 137.63 | 28.75 | 88.69 | 152,917.81 | 2,202.02 | 12,845.10 | 1200 | |
| Porportion in Cow Unit | 0.20 | 60.00 | 0.51 | 5.33 | 1.11 | 3.43 | 5,917.81 | 85.22 | 497.10 | 1200 | Lactate for 305 days, dry for 60 days, average weight 1200# |
| Porportion in Cow Unit | 0.15 | 91.25 | 0.59 | 6.16 | 1.29 | 3.97 | 6,843.75 | 98.55 | 574.88 | 600 | Replace every 4 years, average weight of 600# |
| Dairy Total | 1.35 | 365.00 | 14.25 | 149.11 | 31.15 | 96.09 | 165,679 | 2,386 | 13,917 | 1350 | |
| One year to two year for Replacement Heifer | 0.135 | 49.324 | 0.19 | 2.27 | 0.61 | 1.40 | 193.30 | 86.65 | 93.32 | 925 | Repl. Heifer for 1 yr with 8 year replacement, adjusted for weight |
| | | | | | | | | | | 925 | |
| 6 to 12 months for Replacement Heifer | 0.10416667 | 38.0208333 | 0.11 | 1.35 | 0.36 | 0.83 | 114.85 | 51.49 | 55.45 | 600 | Repl. Heifer for 6 months with 8 year replacement, adjusted for weight |
| Beef Cow + Bull Share | 1.06 | 365.00 | 11.22 | 131.55 | 35.59 | 81.25 | 11,220.10 | 5,029.70 | 5,416.60 | 1,060 | Include 1/25 of a bull with cow, bull weighing 1500# |
| Beef Cow Total | 1.30 | 365.00 | 11.53 | 135.16 | 36.57 | 83.48 | 11,528 | 5,168 | 5,565 | 1300 | |
| Other cattle & calves | 0.75 | 365.00 | 7.94 | 91.08 | 25.10 | 57.49 | 7,918.75 | 3,559 | 3,833 | 750 | Take cattle & calves number and subtract dairy and beef cows (incl heifers and bull), adjusted for weight |
| Replacement Gilt | 0.125 | 182.5 | 0.96 | 11.86 | 4.11 | 6.62 | 479.06 | 182.50 | 5,475.00 | 250 | Replace sow every year, Ave wt 250#, for 6 months |
| Dry Sow | 0.19 | 196.00 | 1.55 | 19.16 | 6.63 | 10.68 | 773.58 | 294.70 | 8,840.94 | 350 | 3 turns at 9 weeks each per sow (+1 week), average weight 350# |
| Sow, Nursing, no pigs | 0.16 | 168.00 | 1.14 | 14.07 | 4.87 | 7.85 | 568.35 | 216.51 | 6,495.39 | 350 | 3 turns at 8 weeks each per sow, average weight 350# |
| Pigs | 0.07364384 | 168 | 0.52 | 6.43 | 2.23 | 3.59 | 259.82 | 98.98 | 2,969.32 | 160 | Nursing pigs average weight of 20 lbs. |
| Sow, Nursing with pigs | 0.16 | 168.00 | 1.14 | 14.07 | 4.87 | 7.85 | 568.35 | 216.51 | 6,495.39 | 350 | 3 turns at 8 weeks each per sow, weight 350# |
| Sow Total | 0.47 | 365.00 | 4.16 | 51.52 | 17.84 | 28.75 | 2,080.81 | 792.69 | 23,780.65 | 470 | |
| Grower Total | 0.13 | 944.00 | 1.85 | 23.25 | 8.05 | 12.97 | 939.12 | 357.76 | 10,752.80 | 130 | 3 turns per year with one week down each turn |
| Sheep Total | 0.1 | 365 | 0.73 | 15.33 | 3.18 | 11.68 | 328.50 | 730.00 | 1,022.00 | 100 | 100# average weight |
| Horse Total | 1.10 | 365 | 10.24 | 120.45 | 28.51 | 100.38 | 88,350.00 | 16.86 | 10,435.00 | 1100 | 1100# average weight |
| Deer Total | 0.1 | 365 | 0.73 | 16.43 | 2.56 | 10.95 | 0.00 | 18.25 | 0.00 | 100 | 100# average weight |
| Wild Turkeys | 0.015 | 365 | 0.13 | 3.39 | 1.26 | 1.31 | 0.00 | 3.39 | 0.00 | 15 | Average weight of wild turkeys is 15# |
| Broilers | 0.00225 | 49 | 0.0047 | 0.1213 | 0.0331 | 0.0441 | 0.0000 | 0.6664 | 0.0000 | 2.25 | 5 turns at 49 days, ave weight 2.25# |
| Turkeys Total | 0.015 | 150 | 0.0529 | 1.3950 | 0.5175 | 0.5400 | 0.0000 | 1.3950 | 0.0000 | 15 | 2 turns each at 150 days, ave weight 15# |
| Broiler Breeder/Layer Total | 0.004 | 358 | 0.0458 | 1.2029 | 0.4296 | 0.4296 | 71.5000 | 4.8688 | 10.5968 | 3.6 | Each turn of layers is 20 weeks of growing, 90 weeks of production and 2 weeks of turnaround which converts to 358 days of birds and 7 days of cleanup on an annual basis. Pullets were included as part of the layer system because data was not available for pullets in ASAE, Feb 03. |
| Wild Ducks | 0.002 | 1 | 0.0001 | 0.0030 | 0.0011 | 0.0014 | 0.0000 | 0.2430 | 0.5400 | 2 | Average weight of wild ducks is 2# |
| Geese | 0.0075 | 1 | 0.0002 | 0.0031 | 0.0012 | 0.0000 | 0.0000 | 4.9000 | 0.0000 | 7.5 | Average weight of geese is 10# |

| | Animal Days |
|---|---|
| | 241500 |
| | 128500 |

# Appendix D

## Livestock Numbers and Manure Production and its Components in the IRW by Zip Code and Summarized by County for Arkansas and Oklahoma

Table D-A1: Livestock numbers and manure production in IRW by zip code and summarized for Arkansas

Table D-A2: Livestock numbers and manure production in IRW by zip code and summarized for Benton County, Arkansas

Table D-A3: Livestock numbers and manure production in IRW by zip code and summarized for Washington County, Arkansas

and

Table D-O1: Livestock numbers and manure production in IRW by zip code and summarized for Oklahoma

Table D-O2: Livestock numbers and manure production in IRW by zip code and summarized for Adair County, Oklahoma

Table D-O3: Livestock numbers and manure production in IRW by zip code and summarized for Cherokee County, Oklahoma

Table D-O4: Livestock numbers and manure production in IRW by zip code and summarized for Delaware County, Oklahoma

Table D-O5: Livestock numbers and manure production in IRW by zip code and summarized for Sequoyah County, Oklahoma

**Table D-A1: Livestock numbers and manure production in IRW by zip code and summarized for Arkansas**

| Zip Code<br>Percent in County<br>Percent Relevant | Study Area Total |
|---|---|
| Farms by size , All farms | 2,832 |
| Percent of county farms in zip code area | 54.71% |
| Land in farms, acres | 372,078 |
| Cattle and calves inventroy, number | 122,503 |
| Beef cow inventory, number | 65,058 |
| Wet Manure Weight, Tons | 750,010 |
| N, DRY LBS | 8,793,223 |
| P, DRY LBS | 2,379,343 |
| K, DRY LBS | 5,431,108 |
| Total coliforn, $x10^{10}$ cfu | 750,010,219 |
| Fecal coliform, $x10^{10}$ cfu | 336,211,478 |
| Fecal streptococcus, $x10^{10}$ cfu | 362,073,899 |
| Milk cow inventory, number | 3,411 |
| Wet Manure Weight, Tons | 48,604 |
| N, DRY LBS | 508,645 |
| P, DRY LBS | 106,250 |
| K, DRY LBS | 327,794 |
| Total coliforn, $x10^{10}$ cfu | 565,161,369 |
| Fecal coliform, $x10^{10}$ cfu | 8,138,324 |
| Fecal streptococcus, $x10^{10}$ cfu | 47,473,555 |
| Other Cattle and Calves inventory, number | 54,033 |
| Wet Manure Weight, Tons | 428,956 |
| N, DRY LBS | 5,029,134 |
| P, DRY LBS | 1,360,824 |
| K, DRY LBS | 3,106,230 |
| Total coliforn, $x10^{10}$ cfu | 428,955,532 |
| Fecal coliform, $x10^{10}$ cfu | 192,290,411 |
| Fecal streptococcus, $x10^{10}$ cfu | 207,081,981 |
| Hogs and pigs inventory, number | 21,784 |
| Wet Manure Weight, Tons | 90,655 |
| N, DRY LBS | 1,122,401 |
| P, DRY LBS | 388,523 |
| K, DRY LBS | 625,954 |
| Total coliforn, $x10^{10}$ cfu | 45,327,719 |
| Fecal coliform, $x10^{10}$ cfu | 17,267,703 |
| Fecal streptococcus, $x10^{10}$ cfu | 518,031,076 |
| Hogs and pigs other inventory, number | 57,922 |
| Wet Manure Weight, Tons | 108,792 |
| N, DRY LBS | 1,346,948 |
| P, DRY LBS | 466,251 |
| K, DRY LBS | 751,182 |
| Total coliforn, $x10^{10}$ cfu | 54,395,972 |
| Fecal coliform, $x10^{10}$ cfu | 20,722,275 |
| Fecal streptococcus, $x10^{10}$ cfu | 621,668,249 |
| Sheep and lambs inventory, number | 1,281 |
| Wet Manure Weight, Tons | 935 |
| N, DRY LBS | 19,641 |
| P, DRY LBS | 4,069 |
| K, DRY LBS | 14,965 |
| Total coliforn, $x10^{10}$ cfu | 420,884 |
| Fecal coliform, $x10^{10}$ cfu | 935,297 |
| Fecal streptococcus, $x10^{10}$ cfu | 1,309,416 |
| Horses and ponies of all ages inventory, number | 4,707 |
| Wet Manure Weight, Tons | 48,188 |
| N, DRY LBS | 566,916 |
| P, DRY LBS | 134,170 |
| K, DRY LBS | 472,430 |
| Total coliforn, $x10^{10}$ cfu | 415,738,679 |
| Fecal coliform, $x10^{10}$ cfu | 79,368 |
| Fecal streptococcus, $x10^{10}$ cfu | 49,132,753 |
| **TOTAL UNITS, NONPOULTRY, DOMESTIC LIVESTOCK** | |
| Wet Manure Weight, Tons | 1,476,140 |
| N, DRY LBS | 17,386,908 |
| P, DRY LBS | 4,839,431 |
| K, DRY LBS | 10,729,664 |
| Total coliforn, $x10^{10}$ cfu | 2,260,010,374 |
| Fecal coliform, $x10^{10}$ cfu | 575,644,855 |
| Fecal streptococcus, $x10^{10}$ cfu | 1,806,770,928 |
| Whitetail Deer population | 11,077 |
| Wet Manure Weight, Tons | 8,045 |
| N, DRY LBS | 181,020 |
| P, DRY LBS | 28,159 |
| K, DRY LBS | 120,680 |
| Total coliforn, $x10^{10}$ cfu | 0 |
| Fecal coliform, $x10^{10}$ cfu | 201,133 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 |
| Wild Turkey population | 1,762 |

Note of explanation:
The 2002 Census data for Arkansas reports numbers for All Cattle and Calves, Beef Cows, Milk Cows, and for Other Cattle and Calves. When the numbers are evaluated, the total of Beef Cows, Milk Cows, and Other Cattle and Calves equal All Cattle and Calves. Clay continued that approach when determining the numbers that were appropriate for each of the zip codes and portions of zip codes included in the study area of IRW.

Swine numbers are reported in two groups. The first is called Hogs and Pigs inventory and the second is referred to as Hogs and Pigs, Sales which is called Hogs and Pigs, Other in the Clay analysis.

Wildlife population estimates were determined by interviews with Oklahoma Wildlife Department personnel.

All county animal numbers were allocated on a proportional basis to the zip codes and portions of zip codes by using the 2002 Census zip code data that as reported in relation to the total county numbers.

**Table D-A1: Livestock numbers and manure production in IRW by zip code and summarized for Arkansas**

| Zip Code<br>Percent in County<br>Percent Relevant | Study Area Total |
|---|---|
| Farms by size , All farms | 2,832 |
| Percent of county farms in zip code area | 54.71% |
| Land in farms, acres | 372,078 |
| Wet Manure Weight, Tons | 227 |
| N, DRY LBS | 5,981 |
| P, DRY LBS | 2,219 |
| K, DRY LBS | 2,315 |
| Total coliforn, x$10^{10}$ cfu | 0 |
| Fecal coliform, x$10^{10}$ cfu | 5,981 |
| Fecal streptococcus, x$10^{10}$ cfu | 0 |
| Geese population, goose days in zip code | 68,434 |
| Wet Manure Weight, Tons | 13 |
| N, DRY LBS | 209 |
| P, DRY LBS | 79 |
| K, DRY LBS | 0 |
| Total coliforn, x$10^{10}$ cfu | 0 |
| Fecal coliform, x$10^{10}$ cfu | 335,327 |
| Fecal streptococcus, x$10^{10}$ cfu | 0 |
| Duck population, duck days in zip code | 55,015 |
| Wet Manure Weight, Tons | 6 |
| N, DRY LBS | 165 |
| P, DRY LBS | 59 |
| K, DRY LBS | 78 |
| Total coliforn, x$10^{10}$ cfu | 0 |
| Fecal coliform, x$10^{10}$ cfu | 13,369 |
| Fecal streptococcus, x$10^{10}$ cfu | 29,708 |
| **TOTAL UNITS,NONPOULTRY, WILDLIFE** | |
| Wet Manure Weight, Tons | 8,291 |
| N, DRY LBS | 187,375 |
| P, DRY LBS | 30,516 |
| K, DRY LBS | 123,073 |
| Total coliforn, x$10^{10}$ cfu | 0 |
| Fecal coliform, x$10^{10}$ cfu | 555,809 |
| Fecal streptococcus, x$10^{10}$ cfu | 29,708 |
| Layers 20 weeks old and older inventory, number | 1,982,754 |
| Wet Manure Weight, Tons | 90,858 |
| N, LBS | 2,385,016 |
| P, LBS | 851,791 |
| K, LBS | 851,791 |
| Total coliforn, x$10^{10}$ cfu | 141,965,217 |
| Fecal coliform, x$10^{10}$ cfu | 9,653,635 |
| Fecal streptococcus, x$10^{10}$ cfu | 21,010,852 |
| , Broilers and other meat type chickens sold, number | 131,887,311 |
| Wet Manure Weight, Tons | 617,974 |
| N, LBS | 15,994,634 |
| P, LBS | 4,362,173 |
| K, LBS | 5,816,230 |
| Total coliforn, x$10^{10}$ cfu | 0 |
| Fecal coliform, x$10^{10}$ cfu | 87,889,058 |
| Fecal streptococcus, x$10^{10}$ cfu | 0 |
| Turkeys sold, number | 512,089 |
| Wet Manure Weight, Tons | 27,077 |
| N, LBS | 714,364 |
| P, LBS | 265,006 |
| K, LBS | 276,528 |
| Total coliforn, x$10^{10}$ cfu | 0 |
| Fecal coliform, x$10^{10}$ cfu | 714,364 |
| Fecal streptococcus, x$10^{10}$ cfu | 0 |
| **TOTAL UNITS POULTRY** | |
| Wet Manure Weight, Tons | 735,909 |
| N, DRY LBS | 19,094,013 |
| P, DRY LBS | 5,478,970 |
| K, DRY LBS | 6,944,550 |
| Total coliforn, x$10^{10}$ cfu | 141,965,217 |
| Fecal coliform, x$10^{10}$ cfu | 98,257,057 |
| Fecal streptococcus, x$10^{10}$ cfu | 21,010,852 |
| **TOTAL FOR POULTRY AND NONPOULTRY TOTAL UNITS FOR ARKANSAS** | |
| Wet Manure Weight, Tons | 2,220,340 |
| N, DRY LBS | 36,668,297 |
| P, DRY LBS | 10,348,917 |
| K, DRY LBS | 17,797,287 |
| Total coliforn, x$10^{10}$ cfu | 2,401,975,591 |
| Fecal coliform, x$10^{10}$ cfu | 674,457,721 |
| Fecal streptococcus, x$10^{10}$ cfu | 1,827,811,488 |

**Table D-A2: Livestock numbers and manure production in IRW by zip code and summarized for Benton County, Arkansas**

| | Benton County | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Zip Code | 72704 | 72712 | 72716 | 72718 | 72719 | 72722 | 72734 | 72745 | 72756 | 72757 |
| Percent in County | 0.57% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 99.84% | 100.00% | 99.30% | 100.00% |
| Percent Relevant | 100.00% | 75.00% | 100.00% | 100.00% | 100.00% | 25.00% | 100.00% | 50.00% | 25.00% | 100.00% |
| Farms by size , All farms | 1.29 | 249.00 | 0.00 | 22.00 | 62.00 | 40.25 | 309.50 | 82.50 | 49.15 | 11.00 |
| Percent of county farms in zip code area | 0.05% | 10.48% | 0.00% | 0.93% | 2.61% | 1.69% | 13.03% | 3.47% | 2.07% | 0.46% |
| Land in farms, acres | 169.51 | 32,764.67 | 0.00 | 2,894.87 | 8,158.27 | 5,296.30 | 40,726.09 | 10,855.76 | 6,467.86 | 1,447.44 |
| Cattle and calves inventroy, number | 60 | 10,685 | 0 | 898 | 3,337 | 1,957 | 14,993 | 3,465 | 2,199 | 642 |
| Beef cow inventory, number | 33 | 5,791 | 0 | 468 | 1,716 | 1,063 | 7,864 | 1,813 | 1,142 | 312 |
| Wet Manure Weight, Tons | 377 | 66,756 | 0 | 5,394 | 19,780 | 12,250 | 90,661 | 20,903 | 13,168 | 3,596 |
| N, DRY LBS | 4,416 | 782,657 | 0 | 63,245 | 231,898 | 143,619 | 1,062,921 | 245,074 | 154,389 | 42,163 |
| P, DRY LBS | 1,195 | 211,778 | 0 | 17,113 | 62,749 | 38,862 | 287,614 | 66,314 | 41,776 | 11,409 |
| K, DRY LBS | 2,728 | 483,406 | 0 | 39,063 | 143,231 | 88,706 | 656,510 | 151,369 | 95,358 | 26,042 |
| Total coliforn, $x10^{10}$ cfu | 376,666 | 66,756,017 | 0 | 5,394,426 | 19,779,561 | 12,249,842 | 90,660,875 | 20,903,399 | 13,168,467 | 3,596,284 |
| Fecal coliform, $x10^{10}$ cfu | 168,850 | 29,925,111 | 0 | 2,418,191 | 8,866,700 | 5,491,308 | 40,641,082 | 9,370,489 | 5,903,106 | 1,612,127 |
| Fecal streptococcus, $x10^{10}$ cfu | 181,839 | 32,227,043 | 0 | 2,604,205 | 9,548,753 | 5,913,717 | 43,767,319 | 10,091,296 | 6,357,191 | 1,736,137 |
| Milk cow inventory, number | 0 | 276 | 0 | 0 | 0 | 0 | 551 | 0 | 0 | 0 |
| Wet Manure Weight, Tons | 0 | 3,933 | 0 | 0 | 0 | 0 | 7,853 | 0 | 0 | 0 |
| N, DRY LBS | 0 | 41,159 | 0 | 0 | 0 | 0 | 82,186 | 0 | 0 | 0 |
| P, DRY LBS | 0 | 8,598 | 0 | 0 | 0 | 0 | 17,168 | 0 | 0 | 0 |
| K, DRY LBS | 0 | 26,525 | 0 | 0 | 0 | 0 | 52,964 | 0 | 0 | 0 |
| Total coliforn, $x10^{10}$ cfu | 0 | 45,731,943 | 0 | 0 | 0 | 0 | 91,317,544 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 658,540 | 0 | 0 | 0 | 0 | 1,314,973 | 0 | 0 | 0 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 3,841,483 | 0 | 0 | 0 | 0 | 7,670,674 | 0 | 0 | 0 |
| Other Cattle and Calves inventory, number | 28 | 4,618 | 0 | 431 | 1,621 | 895 | 6,577 | 1,652 | 1,056 | 330 |
| Wet Manure Weight, Tons | 220 | 36,664 | 0 | 3,418 | 12,871 | 7,103 | 52,215 | 13,116 | 8,385 | 2,618 |
| N, DRY LBS | 2,577 | 429,848 | 0 | 40,069 | 150,903 | 83,276 | 612,181 | 153,775 | 98,308 | 30,695 |
| P, DRY LBS | 697 | 116,312 | 0 | 10,842 | 40,832 | 22,533 | 165,649 | 41,610 | 26,601 | 8,306 |
| K, DRY LBS | 1,591 | 265,495 | 0 | 24,749 | 93,205 | 51,435 | 378,112 | 94,979 | 60,720 | 18,959 |
| Total coliforn, $x10^{10}$ cfu | 219,764 | 36,663,539 | 0 | 3,417,674 | 12,871,111 | 7,102,913 | 52,215,443 | 13,116,120 | 8,385,126 | 2,618,090 |
| Fecal coliform, $x10^{10}$ cfu | 98,515 | 16,435,379 | 0 | 1,532,061 | 5,769,808 | 3,184,064 | 23,406,923 | 5,879,640 | 3,758,850 | 1,173,627 |
| Fecal streptococcus, $x10^{10}$ cfu | 106,093 | 17,699,639 | 0 | 1,649,911 | 6,213,640 | 3,428,992 | 25,207,455 | 6,331,920 | 4,047,992 | 1,263,906 |
| Hogs and pigs inventory, number | (D) | (D) | (D) | (D) | 0 | (D) | (D) | 0 | (D) | 0 |
| Wet Manure Weight, Tons | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| N, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| K, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total coliforn, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hogs and pigs other inventory, number | (D) | (D) | (D) | (D) | 0 | (D) | (D) | 0 | (D) | 0 |
| Wet Manure Weight, Tons | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| N, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| K, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total coliforn, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sheep and lambs inventory, number | 0 | 166 | 0 | 0 | 0 | 35 | 277 | 0 | 41 | 0 |
| Wet Manure Weight, Tons | 0 | 121 | 0 | 0 | 0 | 25 | 202 | 0 | 30 | 0 |
| N, DRY LBS | 0 | 2,550 | 0 | 0 | 0 | 531 | 4,244 | 0 | 633 | 0 |
| P, DRY LBS | 0 | 528 | 0 | 0 | 0 | 110 | 879 | 0 | 131 | 0 |
| K, DRY LBS | 0 | 1,943 | 0 | 0 | 0 | 405 | 3,234 | 0 | 482 | 0 |
| Total coliforn, $x10^{10}$ cfu | 0 | 54,653 | 0 | 0 | 0 | 11,386 | 90,943 | 0 | 13,568 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 121,452 | 0 | 0 | 0 | 25,303 | 202,096 | 0 | 30,151 | 0 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 170,033 | 0 | 0 | 0 | 35,424 | 282,935 | 0 | 42,211 | 0 |
| Horses and ponies of all ages inventory, number | 2 | 401 | 0 | 35 | 91 | 49 | 434 | 114 | 85 | 0 |
| Wet Manure Weight, Tons | 22 | 4,110 | 0 | 362 | 931 | 504 | 4,439 | 1,163 | 873 | 0 |
| N, DRY LBS | 263 | 48,353 | 0 | 4,257 | 10,948 | 5,930 | 52,223 | 13,685 | 10,267 | 0 |
| P, DRY LBS | 62 | 11,444 | 0 | 1,008 | 2,591 | 1,403 | 12,359 | 3,239 | 2,430 | 0 |
| K, DRY LBS | 220 | 40,294 | 0 | 3,548 | 9,123 | 4,942 | 43,519 | 11,404 | 8,556 | 0 |
| Total coliforn, $x10^{10}$ cfu | 193,217 | 35,458,810 | 0 | 3,122,159 | 8,028,410 | 4,348,722 | 38,296,586 | 10,035,512 | 7,529,310 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 37 | 6,769 | 0 | 596 | 1,533 | 830 | 7,311 | 1,916 | 1,437 | 0 |
| Fecal streptococcus, $x10^{10}$ cfu | 22,835 | 4,190,587 | 0 | 368,982 | 948,812 | 513,940 | 4,525,960 | 1,186,015 | 889,828 | 0 |
| **TOTAL UNITS, NONPOULTRY, DOMESTIC LIVESTOCK** | | | | | | | | | | |
| Wet Manure Weight, Tons | 619 | 111,584 | 0 | 9,174 | 33,581 | 19,882 | 155,371 | 35,183 | 22,456 | 6,214 |
| N, DRY LBS | 7,256 | 1,304,567 | 0 | 107,572 | 393,749 | 233,356 | 1,813,754 | 412,534 | 263,598 | 72,858 |
| P, DRY LBS | 1,954 | 348,659 | 0 | 28,963 | 106,172 | 62,908 | 483,669 | 111,163 | 70,938 | 19,715 |
| K, DRY LBS | 4,539 | 817,662 | 0 | 67,360 | 245,559 | 145,487 | 1,134,338 | 257,752 | 165,116 | 45,001 |
| Total coliforn, $x10^{10}$ cfu | 789,646 | 184,664,963 | 0 | 11,934,259 | 40,679,081 | 23,712,863 | 272,581,391 | 44,055,032 | 29,096,472 | 6,214,374 |
| Fecal coliform, $x10^{10}$ cfu | 267,402 | 47,147,252 | 0 | 3,950,847 | 14,638,041 | 8,701,505 | 65,572,385 | 15,252,045 | 9,693,544 | 2,785,754 |
| Fecal streptococcus, $x10^{10}$ cfu | 310,766 | 58,128,785 | 0 | 4,623,099 | 16,711,205 | 9,892,072 | 81,454,343 | 17,609,231 | 11,337,221 | 3,000,043 |
| Whitetail Deer population | 4.82 | 932.32 | 0.00 | 82.37 | 232.14 | 150.71 | 1,158.87 | 308.90 | 184.04 | 41.19 |
| Wet Manure Weight, Tons | 4 | 681 | 0 | 60 | 169 | 110 | 846 | 225 | 134 | 30 |
| N, DRY LBS | 79 | 15,313 | 0 | 1,353 | 3,813 | 2,475 | 19,034 | 5,074 | 3,023 | 676 |
| P, DRY LBS | 12 | 2,382 | 0 | 210 | 593 | 385 | 2,961 | 789 | 470 | 105 |
| K, DRY LBS | 53 | 10,209 | 0 | 902 | 2,542 | 1,650 | 12,690 | 3,382 | 2,015 | 451 |
| Total coliforn, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 88 | 17,015 | 0 | 1,503 | 4,237 | 2,750 | 21,149 | 5,637 | 3,359 | 752 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wild Turkey population | 0.54 | 103.71 | 0.00 | 9.16 | 25.82 | 16.76 | 128.91 | 34.36 | 20.47 | 4.58 |
| Wet Manure Weight, Tons | 0 | 13 | 0 | 1 | 3 | 2 | 17 | 4 | 3 | 1 |
| N, DRY LBS | 2 | 352 | 0 | 31 | 88 | 57 | 438 | 117 | 69 | 16 |
| P, DRY LBS | 1 | 131 | 0 | 12 | 33 | 21 | 162 | 43 | 26 | 6 |
| K, DRY LBS | 1 | 136 | 0 | 12 | 34 | 22 | 169 | 45 | 27 | 6 |
| Total coliforn, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 2 | 352 | 0 | 31 | 88 | 57 | 438 | 117 | 69 | 16 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Geese population, goose days in zip code | 31.17 | 6,025.09 | 0.00 | 532.34 | 1,500.22 | 973.93 | 7,489.11 | 1,996.26 | 1,189.37 | 266.17 |
| Wet Manure Weight, Tons | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| N, DRY LBS | 0 | 18 | 0 | 2 | 5 | 3 | 23 | 6 | 4 | 1 |
| P, DRY LBS | 0 | 7 | 0 | 1 | 2 | 1 | 9 | 2 | 1 | 0 |
| K, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total coliforn, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 153 | 29,523 | 0 | 2,608 | 7,351 | 4,772 | 36,697 | 9,782 | 5,828 | 1,304 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Duck population, duck days in zip code | 58.58 | 11,323.47 | 0.00 | 1,000.47 | 2,819.50 | 1,830.40 | 14,074.94 | 3,751.75 | 2,235.29 | 500.23 |
| Wet Manure Weight, Tons | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| N, DRY LBS | 0 | 34 | 0 | 3 | 8 | 5 | 42 | 11 | 7 | 2 |
| P, DRY LBS | 0 | 12 | 0 | 1 | 3 | 2 | 15 | 4 | 2 | 1 |

**Table D-A2: Livestock numbers and manure production in IRW by zip code and summarized for Benton County, Arkansas**

| | Benton County | | | | Benton County |
|---|---|---|---|---|---|
| Zip Code | 72758 | 72761 | 72762 | 72764 | Study Area Total |
| Percent in County | 100.00% | 99.29% | 12.18% | 7.70% | |
| Percent Relevant | 50.00% | 100.00% | 100.00% | 25.00% | |
| Farms by size , All farms | 37.50 | 299.86 | 36.54 | 4.72 | 1,205 |
| Percent of county farms in zip code area | 1.58% | 12.62% | 1.54% | 0.20% | 50.73% |
| Land in farms, acres | 4,934.44 | 39,456.53 | 4,808.12 | 620.59 | 158,600 |
| Cattle and calves inventroy, number | 1,572 | 13,253 | 1,845 | 221 | 55,128 |
| Beef cow inventory, number | 877 | 7,124 | 1,026 | 117 | 29,346 |
| Wet Manure Weight, Tons | 10,115 | 82,127 | 11,827 | 1,350 | 338,304 |
| N, DRY LBS | 118,584 | 962,871 | 138,658 | 15,827 | 3,966,323 |
| P, DRY LBS | 32,088 | 260,542 | 37,519 | 4,283 | 1,073,240 |
| K, DRY LBS | 73,243 | 594,715 | 85,642 | 9,776 | 2,449,788 |
| Total coliforn, $x10^{10}$ cfu | 10,114,548 | 82,127,254 | 11,826,739 | 1,349,955 | 338,304,032 |
| Fecal coliform, $x10^{10}$ cfu | 4,534,108 | 36,815,665 | 5,301,642 | 605,152 | 151,653,532 |
| Fecal streptococcus, $x10^{10}$ cfu | 4,882,885 | 39,647,640 | 5,709,460 | 651,702 | 163,319,188 |
| Milk cow inventory, number | 0 | 853 | 37 | 0 | 1,717 |
| Wet Manure Weight, Tons | 0 | 12,149 | 532 | 0 | 24,467 |
| N, DRY LBS | 0 | 127,140 | 5,570 | 0 | 256,055 |
| P, DRY LBS | 0 | 26,558 | 1,164 | 0 | 53,487 |
| K, DRY LBS | 0 | 81,935 | 3,590 | 0 | 165,013 |
| Total coliforn, $x10^{10}$ cfu | 0 | 141,266,988 | 6,189,056 | 0 | 284,505,531 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 2,034,245 | 89,122 | 0 | 4,096,880 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 11,866,427 | 519,881 | 0 | 23,898,465 |
| Other Cattle and Calves inventory, number | 695 | 5,277 | 781 | 104 | 24,065 |
| Wet Manure Weight, Tons | 5,517 | 41,891 | 6,204 | 826 | 191,047 |
| N, DRY LBS | 64,677 | 491,135 | 72,731 | 9,682 | 2,239,858 |
| P, DRY LBS | 17,501 | 132,895 | 19,680 | 2,620 | 606,079 |
| K, DRY LBS | 39,948 | 303,348 | 44,922 | 5,980 | 1,383,442 |
| Total coliforn, $x10^{10}$ cfu | 5,516,580 | 41,890,965 | 6,203,512 | 825,851 | 191,046,687 |
| Fecal coliform, $x10^{10}$ cfu | 2,472,950 | 18,778,708 | 2,780,885 | 370,209 | 85,641,618 |
| Fecal streptococcus, $x10^{10}$ cfu | 2,663,177 | 20,223,224 | 2,994,799 | 398,687 | 92,229,435 |
| Hogs and pigs inventory, number | 0 (D) | (D) | (D) | | 0 |
| Wet Manure Weight, Tons | 0 | 0 | 0 | 0 | 0 |
| N, DRY LBS | 0 | 0 | 0 | 0 | 0 |
| P, DRY LBS | 0 | 0 | 0 | 0 | 0 |
| K, DRY LBS | 0 | 0 | 0 | 0 | 0 |
| Total coliforn, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| Hogs and pigs other inventory, number | 0 (D) | (D) | (D) | | 0 |
| Wet Manure Weight, Tons | 0 | 0 | 0 | 0 | 0 |
| N, DRY LBS | 0 | 0 | 0 | 0 | 0 |
| P, DRY LBS | 0 | 0 | 0 | 0 | 0 |
| K, DRY LBS | 0 | 0 | 0 | 0 | 0 |
| Total coliforn, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| Sheep and lambs inventory, number | 0 | 165 | 24 | 0 | 708 |
| Wet Manure Weight, Tons | 0 | 121 | 17 | 0 | 517 |
| N, DRY LBS | 0 | 2,532 | 362 | 0 | 10,854 |
| P, DRY LBS | 0 | 525 | 75 | 0 | 2,248 |
| K, DRY LBS | 0 | 1,929 | 276 | 0 | 8,270 |
| Total coliforn, $x10^{10}$ cfu | 0 | 54,265 | 7,766 | 0 | 232,582 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 120,590 | 17,258 | 0 | 516,850 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 168,826 | 24,162 | 0 | 723,590 |
| Horses and ponies of all ages inventory, number | 56 | 431 | 52 | 8 | 1,758 |
| Wet Manure Weight, Tons | 569 | 4,414 | 535 | 81 | 18,003 |
| N, DRY LBS | 6,690 | 51,935 | 6,297 | 948 | 211,797 |
| P, DRY LBS | 1,583 | 12,291 | 1,490 | 224 | 50,125 |
| K, DRY LBS | 5,575 | 43,279 | 5,247 | 790 | 176,497 |
| Total coliforn, $x10^{10}$ cfu | 4,906,250 | 38,085,617 | 4,617,674 | 695,461 | 155,317,729 |
| Fecal coliform, $x10^{10}$ cfu | 937 | 7,271 | 882 | 133 | 29,652 |
| Fecal streptococcus, $x10^{10}$ cfu | 579,830 | 4,501,027 | 545,725 | 82,191 | 18,355,732 |
| **TOTAL UNITS, NONPOULTRY, DOMESTIC LIVESTOCK** | | | | | |
| Wet Manure Weight, Tons | 16,200 | 140,702 | 19,115 | 2,256 | 572,338 |
| N, DRY LBS | 189,952 | 1,635,614 | 223,619 | 26,458 | 6,684,887 |
| P, DRY LBS | 51,172 | 432,811 | 59,928 | 7,127 | 1,785,180 |
| K, DRY LBS | 118,766 | 1,025,206 | 139,677 | 16,546 | 4,183,010 |
| Total coliforn, $x10^{10}$ cfu | 20,537,379 | 303,425,089 | 28,844,747 | 2,871,267 | 969,406,563 |
| Fecal coliform, $x10^{10}$ cfu | 7,007,994 | 57,756,479 | 8,189,789 | 975,494 | 241,938,531 |
| Fecal streptococcus, $x10^{10}$ cfu | 8,125,892 | 76,407,144 | 9,794,027 | 1,132,580 | 298,526,409 |
| Whitetail Deer population | 140.41 | 1,122.74 | 136.82 | 17.66 | 4,513 |
| Wet Manure Weight, Tons | 102 | 820 | 100 | 13 | 3,294 |
| N, DRY LBS | 2,306 | 18,441 | 2,247 | 290 | 74,126 |
| P, DRY LBS | 359 | 2,869 | 350 | 45 | 11,531 |
| K, DRY LBS | 1,537 | 12,294 | 1,498 | 193 | 49,417 |
| Total coliforn, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 2,562 | 20,490 | 2,497 | 322 | 82,362 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| Wild Turkey population | 15.62 | 124.89 | 15.22 | 1.96 | 502 |
| Wet Manure Weight, Tons | 2 | 16 | 2 | 0 | 65 |
| N, DRY LBS | 53 | 424 | 52 | 7 | 1,704 |
| P, DRY LBS | 20 | 157 | 19 | 2 | 632 |
| K, DRY LBS | 21 | 164 | 20 | 3 | 660 |
| Total coliforn, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 53 | 424 | 52 | 7 | 1,704 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| Geese population, goose days in zip code | 907.39 | 7,255.65 | 884.16 | 114.12 | 29,165 |
| Wet Manure Weight, Tons | 0 | 1 | 0 | 0 | 5 |
| N, DRY LBS | 3 | 22 | 3 | 0 | 89 |
| P, DRY LBS | 1 | 8 | 1 | 0 | 34 |
| K, DRY LBS | 0 | 0 | 0 | 0 | 0 |
| Total coliforn, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 4,446 | 35,553 | 4,332 | 559 | 142,908 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| Duck population, duck days in zip code | 1,705.34 | 13,636.18 | 1,661.69 | 214.48 | 54,812 |
| Wet Manure Weight, Tons | 0 | 1 | 0 | 0 | 6 |
| N, DRY LBS | 5 | 41 | 5 | 1 | 164 |
| P, DRY LBS | 2 | 15 | 2 | 0 | 59 |

**Table D-A2: Livestock numbers and manure production in IRW by zip code and summarized for Benton County, Arkansas**

| | Benton County | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Zip Code | 72704 | 72712 | 72716 | 72718 | 72719 | 72722 | 72734 | 72745 | 72756 | 72757 |
| Percent in County | 0.57% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 99.84% | 100.00% | 99.30% | 100.00% |
| Percent Relevant | 100.00% | 75.00% | 100.00% | 100.00% | 100.00% | 25.00% | 100.00% | 50.00% | 25.00% | 100.00% |
| Farms by size , All farms | 1.29 | 249.00 | 0.00 | 22.00 | 62.00 | 40.25 | 309.50 | 82.50 | 49.15 | 11.00 |
| Percent of county farms in zip code area | 0.05% | 10.48% | 0.00% | 0.93% | 2.61% | 1.69% | 13.03% | 3.47% | 2.07% | 0.46% |
| Land in farms, acres | 169.51 | 32,764.67 | 0.00 | 2,894.87 | 8,158.27 | 5,296.30 | 40,726.09 | 10,855.76 | 6,467.86 | 1,447.44 |
| K, DRY LBS | 0 | 16 | 0 | 1 | 4 | 3 | 20 | 5 | 3 | 1 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 14 | 2,752 | 0 | 243 | 685 | 445 | 3,420 | 912 | 543 | 122 |
| Fecal streptococcus, $x10^{10}$ cfu | 32 | 6,115 | 0 | 540 | 1,523 | 988 | 7,600 | 2,026 | 1,207 | 270 |
| **TOTAL UNITS, NONPOULTRY, WILDLIFE** | | | | | | | | | | |
| Wet Manure Weight, Tons | 4 | 696 | 0 | 62 | 173 | 113 | 866 | 231 | 137 | 31 |
| N, DRY LBS | 81 | 15,718 | 0 | 1,389 | 3,914 | 2,541 | 19,537 | 5,208 | 3,103 | 694 |
| P, DRY LBS | 13 | 2,532 | 0 | 224 | 630 | 409 | 3,147 | 839 | 500 | 112 |
| K, DRY LBS | 54 | 10,361 | 0 | 915 | 2,580 | 1,675 | 12,879 | 3,433 | 2,045 | 458 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 257 | 49,641 | 0 | 4,386 | 12,361 | 8,024 | 61,704 | 16,447 | 9,799 | 2,193 |
| Fecal streptococcus, $x10^{10}$ cfu | 32 | 6,115 | 0 | 540 | 1,523 | 988 | 7,600 | 2,026 | 1,207 | 270 |
| Layers 20 weeks old and older inventory, number | 624 | 88,878 | 0 | 0 | 0 | 18,231 | 154,718 | 27,347 | 33,944 | 0 |
| Wet Manure Weight, Tons | 29 | 4,073 | 0 | 0 | 0 | 835 | 7,090 | 1,253 | 1,555 | 0 |
| N, LBS | 750 | 106,909 | 0 | 0 | 0 | 21,930 | 186,107 | 32,895 | 40,831 | 0 |
| P, LBS | 268 | 38,182 | 0 | 0 | 0 | 7,832 | 66,467 | 11,748 | 14,583 | 0 |
| K, LBS | 268 | 38,182 | 0 | 0 | 0 | 7,832 | 66,467 | 11,748 | 14,583 | 0 |
| Total coliform, $x10^{10}$ cfu | 44,643 | 6,363,635 | 0 | 0 | 0 | 1,305,361 | 11,077,815 | 1,958,041 | 2,430,419 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 3,036 | 432,727 | 0 | 0 | 0 | 88,765 | 753,291 | 133,147 | 165,268 | 0 |
| Fecal streptococcus, $x10^{10}$ cfu | 6,607 | 941,818 | 0 | 0 | 0 | 193,193 | 1,639,517 | 289,790 | 359,702 | 0 |
| , Broilers and other meat type chickens sold, number | 37,921 | 8,731,814 | 0 | 0 | 4,989,608 | 4,365,907 | 24,908,124 | 1,663,203 | 1,754,783 | 0 |
| Wet Manure Weight, Tons | 178 | 40,914 | 0 | 0 | 23,379 | 20,457 | 116,710 | 7,793 | 8,222 | 0 |
| N, LBS | 4,599 | 1,058,951 | 0 | 0 | 605,115 | 529,475 | 3,020,733 | 201,705 | 212,811 | 0 |
| P, LBS | 1,254 | 288,805 | 0 | 0 | 165,031 | 144,402 | 823,836 | 55,010 | 58,039 | 0 |
| K, LBS | 1,672 | 385,073 | 0 | 0 | 220,042 | 192,537 | 1,098,448 | 73,347 | 77,386 | 0 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 25,270 | 5,818,838 | 0 | 0 | 3,325,050 | 2,909,419 | 16,598,652 | 1,108,350 | 1,169,379 | 0 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Turkeys sold, number | 0 | 122,370 | 0 | 0 | 0 | 0 | 228,059 | 0 | 0 | 0 |
| Wet Manure Weight, Tons | 0 | 6,470 | 0 | 0 | 0 | 0 | 12,059 | 0 | 0 | 0 |
| N, LBS | 0 | 170,706 | 0 | 0 | 0 | 0 | 318,142 | 0 | 0 | 0 |
| P, LBS | 0 | 63,327 | 0 | 0 | 0 | 0 | 118,020 | 0 | 0 | 0 |
| K, LBS | 0 | 66,080 | 0 | 0 | 0 | 0 | 123,152 | 0 | 0 | 0 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 170,706 | 0 | 0 | 0 | 0 | 318,142 | 0 | 0 | 0 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL UNITS POULTRY** | | | | | | | | | | |
| Wet Manure Weight, Tons | 206 | 51,457 | 0 | 0 | 23,379 | 21,292 | 135,859 | 9,046 | 9,778 | 0 |
| N, DRY LBS | 5,349 | 1,336,566 | 0 | 0 | 605,115 | 551,405 | 3,524,982 | 234,600 | 253,642 | 0 |
| P, DRY LBS | 1,522 | 390,313 | 0 | 0 | 165,031 | 152,235 | 1,008,324 | 66,759 | 72,622 | 0 |
| K, DRY LBS | 1,940 | 489,335 | 0 | 0 | 220,042 | 200,369 | 1,288,067 | 85,095 | 91,968 | 0 |
| Total coliform, $x10^{10}$ cfu | 44,643 | 6,363,635 | 0 | 0 | 0 | 1,305,361 | 11,077,815 | 1,958,041 | 2,430,419 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 28,306 | 6,422,272 | 0 | 0 | 3,325,050 | 2,998,184 | 17,670,085 | 1,241,497 | 1,334,647 | 0 |
| Fecal streptococcus, $x10^{10}$ cfu | 6,607 | 941,818 | 0 | 0 | 0 | 193,193 | 1,639,517 | 289,790 | 359,702 | 0 |
| **TOTAL FOR POULTRY AND NONPOULTRY TOTAL UNITS FOR BENTON COUNTY, ARKANSAS** | | | | | | | | | | |
| Wet Manure Weight, Tons | 829 | 163,737 | 0 | 9,236 | 57,134 | 41,287 | 292,095 | 44,460 | 32,372 | 6,245 |
| N, DRY LBS | 12,686 | 2,656,851 | 0 | 108,960 | 1,002,777 | 787,302 | 5,358,273 | 652,342 | 520,343 | 73,553 |
| P, DRY LBS | 3,490 | 741,504 | 0 | 29,187 | 271,834 | 215,552 | 1,495,140 | 178,760 | 144,060 | 19,826 |
| K, DRY LBS | 6,532 | 1,317,358 | 0 | 68,275 | 468,181 | 347,531 | 2,435,284 | 346,281 | 259,130 | 45,458 |
| Total coliform, $x10^{10}$ cfu | 834,290 | 191,028,598 | 0 | 11,934,259 | 40,679,081 | 25,018,224 | 283,659,206 | 46,013,073 | 31,526,891 | 6,214,374 |
| Fecal coliform, $x10^{10}$ cfu | 295,965 | 53,619,165 | 0 | 3,955,233 | 17,975,452 | 11,707,713 | 83,304,174 | 16,509,990 | 11,037,990 | 2,787,947 |
| Fecal streptococcus, $x10^{10}$ cfu | 317,405 | 59,076,718 | 0 | 4,623,640 | 16,712,728 | 10,086,254 | 83,101,460 | 17,901,047 | 11,698,131 | 3,000,313 |

**Table D-A2: Livestock numbers and manure production in IRW by zip code and summarized for Benton County, Arkansas**

| | Benton County | | | | Benton |
|---|---|---|---|---|---|
| Zip Code | 72758 | 72761 | 72762 | 72764 | County |
| Percent in County | 100.00% | 99.29% | 12.18% | 7.70% | Study Area |
| Percent Relevant | 50.00% | 100.00% | 100.00% | 25.00% | Total |
| Farms by size , All farms | 37.50 | 299.86 | 36.54 | 4.72 | 1,205 |
| Percent of county farms in zip code area | 1.58% | 12.62% | 1.54% | 0.20% | 50.73% |
| Land in farms, acres | 4,934.44 | 39,456.53 | 4,808.12 | 620.59 | 158,600 |
| K, DRY LBS | 2 | 19 | 2 | 0 | 78 |
| Total coliforn, x10$^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, x10$^{10}$ cfu | 414 | 3,314 | 404 | 52 | 13,319 |
| Fecal streptococcus, x10$^{10}$ cfu | 921 | 7,364 | 897 | 116 | 29,599 |
| **TOTAL UNITS, NONPOULTRY, WILDLIFE** | | | | | |
| Wet Manure Weight, Tons | 105 | 839 | 102 | 13 | 3,371 |
| N, DRY LBS | 2,367 | 18,928 | 2,307 | 298 | 76,083 |
| P, DRY LBS | 381 | 3,049 | 372 | 48 | 12,256 |
| K, DRY LBS | 1,560 | 12,477 | 1,520 | 196 | 50,155 |
| Total coliforn, x10$^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, x10$^{10}$ cfu | 7,476 | 59,780 | 7,285 | 940 | 240,294 |
| Fecal streptococcus, x10$^{10}$ cfu | 921 | 7,364 | 897 | 116 | 29,599 |
| Layers 20 weeks old and older inventory, number | 0 | 190,069 | 9,993 | 1,053 | 524,857 |
| Wet Manure Weight, Tons | 0 | 8,710 | 458 | 48 | 24,051 |
| N, LBS | 0 | 228,631 | 12,020 | 1,266 | 631,340 |
| P, LBS | 0 | 81,654 | 4,293 | 452 | 225,478 |
| K, LBS | 0 | 81,654 | 4,293 | 452 | 225,478 |
| Total coliforn, x10$^{10}$ cfu | 0 | 13,608,976 | 715,468 | 75,385 | 37,579,743 |
| Fecal coliform, x10$^{10}$ cfu | 0 | 925,410 | 48,652 | 5,126 | 2,555,423 |
| Fecal streptococcus, x10$^{10}$ cfu | 0 | 2,014,128 | 105,889 | 11,157 | 5,561,802 |
| , Broilers and other meat type chickens sold, number | 0 | 17,752,485 | 1,873,847 | 264,137 | 66,341,830 |
| Wet Manure Weight, Tons | 0 | 83,181 | 8,780 | 1,238 | 310,853 |
| N, LBS | 0 | 2,152,933 | 227,251 | 32,033 | 8,045,605 |
| P, LBS | 0 | 587,163 | 61,978 | 8,736 | 2,194,256 |
| K, LBS | 0 | 782,885 | 82,637 | 11,648 | 2,925,675 |
| Total coliforn, x10$^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, x10$^{10}$ cfu | 0 | 11,830,169 | 1,248,723 | 176,020 | 44,209,870 |
| Fecal streptococcus, x10$^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| Turkeys sold, number | 0 | 0 | 0 | 3,769 | 354,198 |
| Wet Manure Weight, Tons | 0 | 0 | 0 | 199 | 18,728 |
| N, LBS | 0 | 0 | 0 | 5,258 | 494,106 |
| P, LBS | 0 | 0 | 0 | 1,950 | 183,297 |
| K, LBS | 0 | 0 | 0 | 2,035 | 191,267 |
| Total coliforn, x10$^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, x10$^{10}$ cfu | 0 | 0 | 0 | 5,258 | 494,106 |
| Fecal streptococcus, x10$^{10}$ cfu | 0 | 0 | 0 | 0 | 0 |
| **TOTAL UNITS POULTRY** | | | | | |
| Wet Manure Weight, Tons | 0 | 91,891 | 9,238 | 1,485 | 353,632 |
| N, DRY LBS | 0 | 2,381,563 | 239,271 | 38,557 | 9,171,051 |
| P, DRY LBS | 0 | 668,817 | 66,270 | 11,139 | 2,603,032 |
| K, DRY LBS | 0 | 864,538 | 86,929 | 14,136 | 3,342,420 |
| Total coliforn, x10$^{10}$ cfu | 0 | 13,608,976 | 715,468 | 75,385 | 37,579,743 |
| Fecal coliform, x10$^{10}$ cfu | 0 | 12,755,580 | 1,297,375 | 186,404 | 47,259,399 |
| Fecal streptococcus, x10$^{10}$ cfu | 0 | 2,014,128 | 105,889 | 11,157 | 5,561,802 |
| **TOTAL FOR POULTRY AND NONPOULTRY TOTAL UNITS FOR BENTON COUNTY, ARKANSAS** | | | | | |
| Wet Manure Weight, Tons | 16,305 | 233,432 | 28,455 | 3,755 | 929,341 |
| N, DRY LBS | 192,319 | 4,036,106 | 465,196 | 65,313 | 15,932,021 |
| P, DRY LBS | 51,553 | 1,104,677 | 126,570 | 18,314 | 4,400,468 |
| K, DRY LBS | 120,327 | 1,902,222 | 228,127 | 30,878 | 7,575,584 |
| Total coliforn, x10$^{10}$ cfu | 20,537,379 | 317,034,064 | 29,560,216 | 2,946,652 | 1,006,986,306 |
| Fecal coliform, x10$^{10}$ cfu | 7,015,470 | 70,571,839 | 9,494,448 | 1,162,838 | 289,438,225 |
| Fecal streptococcus, x10$^{10}$ cfu | 8,126,813 | 78,428,636 | 9,900,813 | 1,143,853 | 304,117,810 |

**Table D-A3: Livestock numbers and manure production in IRW by zip code and summarized for Washington County, Arkansas**

| | Washington County | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Zip Code | 72702 | 72703 | 72704 | 72717 | 72728 | 72729 | 72730 | 72734 | 72741 | 72744 | 72749 | 72753 |
| Percent in County | 100.00% | 98.99% | 99.43% | 100.00% | 100.00% | 100.00% | 100.00% | 0.14% | 100.00% | 100.00% | 100.00% | 99.87% |
| Percent Relevant | 100.00% | 25.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |
| Farms by size All farms | 19.00 | 41.82 | 224.71 | 101.00 | 6.00 | 27.00 | 116.00 | 0.43 * | | 299.00 | 11.00 | 323.58 |
| Percent of county farms in zip code area | 0.68% | 1.49% | 8.05% | 3.61% | 0.21% | 0.96% | 4.14% | 0.02% | 0.00% | 10.68% | 0.39% | 11.56% |
| Land in farms, acres | 2,494.69 | 5,491.37 | 29,504.50 | 13,261.23 | 787.80 | 3,545.08 | 15,230.72 | 56.98 | 0.00 | 39,258.49 | 1,444.29 | 42,485.67 |
| Cattle and calves inventroy, number | 548 | 1,439 | 8,998 | 4,442 | 0 | 1,152 | 4,278 | 18 | 0 | 12,669 | 603 | 13,365 |
| Beef cow inventory, number | 294 | 801 | 4,777 | 2,549 | 0 | 588 | 2,451 | 9 | 0 | 6,405 | 359 | 6,789 |
| Wet Manure Weight, Tons | 3,391 | 9,230 | 55,066 | 29,386 | 0 | 6,781 | 28,256 | 107 | 0 | 73,843 | 4,144 | 78,262 |
| N, DRY LBS | 39,753 | 108,218 | 645,606 | 344,530 | 0 | 79,507 | 331,279 | 1,249 | 0 | 865,743 | 48,588 | 917,553 |
| P, DRY LBS | 10,757 | 29,283 | 174,693 | 93,226 | 0 | 21,514 | 89,640 | 338 | 0 | 234,260 | 13,147 | 248,279 |
| K, DRY LBS | 24,554 | 66,840 | 398,757 | 212,798 | 0 | 49,107 | 204,614 | 772 | 0 | 534,723 | 30,010 | 566,724 |
| Total coliform, $x10^{10}$ cfu | 3,390,739 | 9,230,354 | 55,066,389 | 29,386,403 | 0 | 6,781,478 | 28,256,156 | 106,545 | 0 | 73,842,756 | 4,144,236 | 78,261,868 |
| Fecal coliform, $x10^{10}$ cfu | 1,519,986 | 4,137,745 | 24,684,933 | 13,173,215 | 0 | 3,039,973 | 12,666,553 | 47,761 | 0 | 33,101,925 | 1,857,761 | 35,082,906 |
| Fecal streptococcus, $x10^{10}$ cfu | 1,636,908 | 4,456,033 | 26,583,774 | 14,186,539 | 0 | 3,273,817 | 13,640,903 | 51,435 | 0 | 35,648,227 | 2,000,666 | 37,781,591 |
| Milk cow inventory, number | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 645 | 0 | 376 |
| Wet Manure Weight, Tons | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 9,197 | 0 | 5,358 |
| N, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 101 | 0 | 96,243 | 0 | 56,069 |
| P, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 20,104 | 0 | 11,712 |
| K, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 65 | 0 | 62,024 | 0 | 36,133 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 112,284 | 0 | 106,937,218 | 0 | 62,298,950 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,617 | 0 | 1,539,896 | 0 | 897,105 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9,432 | 0 | 8,982,726 | 0 | 5,233,112 |
| Other Cattle and Calves inventory, number | 254 | 638 | 4,221 | 1,893 | 0 | 563 | 1,827 | 8 | 0 | 5,618 | 244 | 6,200 |
| Wet Manure Weight, Tons | 2,019 | 5,065 | 33,510 | 15,030 | 0 | 4,473 | 14,503 | 64 | 0 | 44,601 | 1,935 | 49,219 |
| N, DRY LBS | 23,671 | 59,384 | 392,876 | 176,219 | 0 | 52,446 | 170,031 | 749 | 0 | 522,913 | 22,692 | 577,053 |
| P, DRY LBS | 6,405 | 16,069 | 106,308 | 47,683 | 0 | 14,191 | 46,008 | 203 | 0 | 141,494 | 6,140 | 156,144 |
| K, DRY LBS | 14,620 | 36,678 | 242,659 | 108,841 | 0 | 32,393 | 105,019 | 463 | 0 | 322,976 | 14,016 | 356,415 |
| Total coliform, $x10^{10}$ cfu | 2,018,965 | 5,065,081 | 33,509,991 | 15,030,466 | 0 | 4,473,325 | 14,502,609 | 63,885 | 0 | 44,601,422 | 1,935,476 | 49,219,194 |
| Fecal coliform, $x10^{10}$ cfu | 905,053 | 2,270,554 | 15,021,720 | 6,737,795 | 0 | 2,005,284 | 6,501,169 | 28,638 | 0 | 19,993,741 | 867,627 | 22,063,777 |
| Fecal streptococcus, $x10^{10}$ cfu | 974,673 | 2,445,212 | 16,177,237 | 7,256,087 | 0 | 2,159,536 | 7,001,259 | 30,841 | 0 | 21,531,721 | 934,368 | 23,760,990 |
| Hogs and pigs inventory, number | 0 | 0 | 8,090 | 0 | 0 | 0 | 0 | 0 | 0 | 4,520 | 0 | 8,126 |
| Wet Manure Weight, Tons | 0 | 0 | 33,668 | 0 | 0 | 0 | 0 | 0 | 0 | 18,811 | 0 | 33,817 |
| N, DRY LBS | 0 | 0 | 416,838 | 0 | 0 | 0 | 0 | 0 | 0 | 232,904 | 0 | 418,683 |
| P, DRY LBS | 0 | 0 | 144,290 | 0 | 0 | 0 | 0 | 0 | 0 | 80,621 | 0 | 144,929 |
| K, DRY LBS | 0 | 0 | 232,467 | 0 | 0 | 0 | 0 | 0 | 0 | 129,889 | 0 | 233,496 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 16,833,847 | 0 | 0 | 0 | 0 | 0 | 0 | 9,405,750 | 0 | 16,908,340 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 0 | 6,412,894 | 0 | 0 | 0 | 0 | 0 | 0 | 3,583,143 | 0 | 6,441,272 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 192,386,819 | 0 | 0 | 0 | 0 | 0 | 0 | 107,494,283 | 0 | 193,238,173 |
| Hogs and pigs other inventory, number | 0 | 0 | 22,413 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 35,376 |
| Wet Manure Weight, Tons | 0 | 0 | 42,097 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 66,444 |
| N, DRY LBS | 0 | 0 | 521,195 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 822,645 |
| P, DRY LBS | 0 | 0 | 180,414 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 284,762 |
| K, DRY LBS | 0 | 0 | 290,666 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 458,783 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 21,048,262 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33,222,208 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 0 | 8,018,386 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12,656,079 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 240,551,566 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 379,682,381 |
| Sheep and lambs inventory, number | 0 | 43 | 0 | 131 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 262 |
| Wet Manure Weight, Tons | 0 | 32 | 0 | 96 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 192 |
| N, DRY LBS | 0 | 665 | 0 | 2,014 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 4,023 |
| P, DRY LBS | 0 | 138 | 0 | 417 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 833 |
| K, DRY LBS | 0 | 506 | 0 | 1,535 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 3,066 |
| Total coliform, $x10^{10}$ cfu | 0 | 14,243 | 0 | 43,165 | 0 | 0 | 0 | 101 | 0 | 0 | 0 | 88,218 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 31,651 | 0 | 95,922 | 0 | 0 | 0 | 224 | 0 | 0 | 0 | 191,595 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 44,311 | 0 | 134,291 | 0 | 0 | 0 | 313 | 0 | 0 | 0 | 268,232 |
| Horses and ponies of all ages inventory, number | 0 | 69 | 445 | 200 | 0 | 35 | 183 | 1 | 0 | 542 | 29 | 653 |
| Wet Manure Weight, Tons | 0 | 702 | 4,560 | 2,052 | 0 | 362 | 1,871 | 7 | 0 | 5,552 | 302 | 6,690 |
| N, DRY LBS | 0 | 8,258 | 53,650 | 24,139 | 0 | 4,260 | 22,009 | 85 | 0 | 65,317 | 3,550 | 78,704 |
| P, DRY LBS | 0 | 1,954 | 12,697 | 5,713 | 0 | 1,008 | 5,209 | 20 | 0 | 15,458 | 840 | 18,627 |
| K, DRY LBS | 0 | 6,882 | 44,708 | 20,116 | 0 | 3,550 | 18,341 | 71 | 0 | 54,431 | 2,958 | 65,587 |
| Total coliform, $x10^{10}$ cfu | 0 | 6,055,773 | 39,343,360 | 17,701,878 | 0 | 3,123,861 | 16,139,947 | 62,685 | 0 | 47,899,198 | 2,603,217 | 57,716,295 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 1,156 | 7,511 | 3,379 | 0 | 596 | 3,081 | 12 | 0 | 9,144 | 497 | 11,019 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 715,682 | 4,649,670 | 2,092,040 | 0 | 369,184 | 1,907,448 | 7,408 | 0 | 5,660,814 | 307,653 | 6,821,017 |
| **TOTAL UNITS, NONPOULTRY, DOMESTIC LIVESTOCK** | | | | | | | | | | | | |
| Wet Manure Weight, Tons | 5,410 | 15,029 | 168,901 | 46,565 | 0 | 11,617 | 44,630 | 188 | 0 | 152,004 | 6,381 | 239,981 |
| N, DRY LBS | 63,424 | 176,524 | 2,030,165 | 546,903 | 0 | 136,213 | 523,319 | 2,189 | 0 | 1,783,121 | 74,829 | 2,874,730 |
| P, DRY LBS | 17,162 | 47,443 | 618,402 | 147,039 | 0 | 36,713 | 140,857 | 583 | 0 | 491,937 | 20,127 | 865,285 |
| K, DRY LBS | 39,174 | 110,907 | 1,209,257 | 343,290 | 0 | 85,050 | 327,973 | 1,374 | 0 | 1,104,043 | 46,984 | 1,720,203 |
| Total coliform, $x10^{10}$ cfu | 5,409,704 | 20,365,451 | 165,801,849 | 62,161,911 | 0 | 14,378,664 | 58,898,712 | 345,500 | 0 | 282,686,344 | 8,682,929 | 297,713,072 |
| Fecal coliform, $x10^{10}$ cfu | 2,425,040 | 6,441,106 | 54,145,444 | 20,010,311 | 0 | 5,045,853 | 19,170,804 | 78,252 | 0 | 58,227,849 | 2,725,885 | 77,343,753 |
| Fecal streptococcus, $x10^{10}$ cfu | 2,611,581 | 7,661,238 | 480,349,066 | 23,668,957 | 0 | 5,802,537 | 22,549,611 | 99,430 | 0 | 179,317,772 | 3,242,686 | 646,785,496 |

**Table D-A3: Livestock numbers and manure production in IRW by zip code and summarized for Washington County, Arkansas**

| Washington County | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Zip Code | 72702 | 72703 | 72704 | 72717 | 72728 | 72729 | 72730 | 72734 | 72741 | 72744 | 72749 | 72753 |
| Percent in County | 100.00% | 98.99% | 99.43% | 100.00% | 100.00% | 100.00% | 100.00% | 0.14% | 100.00% | 100.00% | 100.00% | 99.87% |
| Percent Relevant | 100.00% | 25.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |
| Farms by size All farms | 19.00 | 41.82 | 224.71 | 101.00 | 6.00 | 27.00 | 116.00 | 0.43 * | | 299.00 | 11.00 | 323.58 |
| Percent of county farms in zip code area | 0.68% | 1.49% | 8.05% | 3.61% | 0.21% | 0.96% | 4.14% | 0.02% | 0.00% | 10.68% | 0.39% | 11.56% |
| Land in farms, acres | 2,494.69 | 5,481.37 | 29,504.50 | 13,261.23 | 787.80 | 3,545.08 | 15,230.72 | 56.88 | 0.00 | 39,258.49 | 1,444.29 | 42,485.67 |
| Whitetail Deer population | 76.05 | 167.41 | 899.46 | 404.28 | 24.02 | 108.07 | 464.32 | 1.74 | 0.00 | 1,196.82 | 44.03 | 1,295.20 |
| Wet Manure Weight, Tons | 56 | 122 | 657 | 295 | 18 | 79 | 339 | 1 | 0 | 874 | 32 | 945 |
| N, DRY LBS | 1,249 | 2,750 | 14,774 | 6,640 | 394 | 1,775 | 7,626 | 29 | 0 | 19,658 | 723 | 21,274 |
| P, DRY LBS | 194 | 428 | 2,298 | 1,033 | 61 | 276 | 1,186 | 4 | 0 | 3,058 | 112 | 3,309 |
| K, DRY LBS | 833 | 1,833 | 9,849 | 4,427 | 263 | 1,183 | 5,084 | 19 | 0 | 13,105 | 482 | 14,182 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 1,388 | 3,055 | 16,415 | 7,378 | 438 | 1,972 | 8,474 | 32 | 0 | 21,842 | 804 | 23,637 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wild Turkey population | 14.72 | 32.41 | 174.14 | 78.27 | 4.65 | 20.92 | 89.90 | 0.34 | 0.00 | 231.71 | 8.52 | 250.76 |
| Wet Manure Weight, Tons | 2 | 4 | 22 | 10 | 1 | 3 | 12 | 0 | 0 | 30 | 1 | 32 |
| N, DRY LBS | 50 | 110 | 591 | 266 | 16 | 71 | 305 | 1 | 0 | 787 | 29 | 851 |
| P, DRY LBS | 19 | 41 | 219 | 99 | 6 | 26 | 113 | 0 | 0 | 292 | 11 | 316 |
| K, DRY LBS | 19 | 43 | 229 | 103 | 6 | 27 | 118 | 0 | 0 | 304 | 11 | 330 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 50 | 110 | 591 | 266 | 16 | 71 | 305 | 1 | 0 | 787 | 29 | 851 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Geese population, goose days in zip code | 458.90 | 1,010.13 | 5,427.33 | 2,439.39 | 144.91 | 652.11 | 2,801.68 | 10.48 | 0.00 | 7,221.57 | 265.68 | 7,815.21 |
| Wet Manure Weight, Tons | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| N, DRY LBS | 1 | 3 | 17 | 7 | 0 | 2 | 9 | 0 | 0 | 22 | 1 | 24 |
| P, DRY LBS | 1 | 1 | 6 | 3 | 0 | 1 | 3 | 0 | 0 | 8 | 0 | 9 |
| K, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 2,249 | 4,950 | 26,594 | 11,953 | 710 | 3,195 | 13,728 | 51 | 0 | 35,386 | 1,302 | 38,295 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Duck population, duck days in zip code | 2.36 | 5.20 | 27.95 | 12.56 | 0.75 | 3.36 | 14.43 | 0.05 | 0.00 | 37.18 | 1.37 | 40.24 |
| Wet Manure Weight, Tons | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| N, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| K, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 1 | 1 | 7 | 3 | 0 | 1 | 4 | 0 | 0 | 9 | 0 | 10 |
| Fecal streptococcus, $x10^{10}$ cfu | 1 | 3 | 15 | 7 | 0 | 2 | 8 | 0 | 0 | 20 | 1 | 22 |
| **TOTAL UNITS, NONPOULTRY, WILDLIFE** | | | | | | | | | | | | |
| Wet Manure Weight, Tons | 57 | 127 | 680 | 306 | 18 | 82 | 351 | 1 | 0 | 905 | 33 | 979 |
| N, DRY LBS | 1,301 | 2,863 | 15,381 | 6,913 | 411 | 1,848 | 7,940 | 30 | 0 | 20,466 | 753 | 22,149 |
| P, DRY LBS | 213 | 470 | 2,524 | 1,134 | 67 | 303 | 1,303 | 5 | 0 | 3,358 | 124 | 3,634 |
| K, DRY LBS | 852 | 1,876 | 10,078 | 4,530 | 269 | 1,211 | 5,202 | 19 | 0 | 13,410 | 493 | 14,517 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 3,687 | 8,116 | 43,607 | 19,600 | 1,164 | 5,240 | 22,511 | 84 | 0 | 58,023 | 2,135 | 62,793 |
| Fecal streptococcus, $x10^{10}$ cfu | 1 | 3 | 15 | 7 | 0 | 2 | 8 | 0 | 0 | 20 | 1 | 22 |
| Layers 20 weeks old and older inventory, number | 0 | 49,518 | 238,745 | 100,047 | 0 | 0 | 0 | 476 | 0 | 420,198 | 0 | 339,718 |
| Wet Manure Weight, Tons | 0 | 2,269 | 10,940 | 4,585 | 0 | 0 | 0 | 22 | 0 | 19,255 | 0 | 15,567 |
| N, LBS | 0 | 59,565 | 287,181 | 120,345 | 0 | 0 | 0 | 573 | 0 | 505,448 | 0 | 408,641 |
| P, LBS | 0 | 21,273 | 102,565 | 42,980 | 0 | 0 | 0 | 205 | 0 | 180,517 | 0 | 145,943 |
| K, LBS | 0 | 21,273 | 102,565 | 42,980 | 0 | 0 | 0 | 205 | 0 | 180,517 | 0 | 145,943 |
| Total coliform, $x10^{10}$ cfu | 0 | 3,545,517 | 17,094,126 | 7,163,384 | 0 | 0 | 0 | 34,098 | 0 | 30,086,212 | 0 | 24,323,843 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 241,095 | 1,162,401 | 487,110 | 0 | 0 | 0 | 2,319 | 0 | 2,045,862 | 0 | 1,654,021 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 524,736 | 2,529,931 | 1,060,181 | 0 | 0 | 0 | 5,046 | 0 | 4,452,759 | 0 | 3,599,929 |
| Broilers and other meat type chickens sold, number | | 1,034,036 | 6,647,249 | 5,431,851 | 0 | 2,507,008 | 7,103,190 | 35,098 | 0 | 14,624,215 | 0 | 9,180,414 |
| Wet Manure Weight, Tons | 0 | 4,845 | 31,147 | 25,452 | 0 | 11,747 | 33,283 | 164 | 0 | 68,524 | 0 | 43,016 |
| N, LBS | 0 | 125,403 | 806,145 | 658,748 | 0 | 304,037 | 861,439 | 4,257 | 0 | 1,773,552 | 0 | 1,113,355 |
| P, LBS | 0 | 34,201 | 219,858 | 179,658 | 0 | 82,919 | 234,938 | 1,161 | 0 | 483,696 | 0 | 303,642 |
| K, LBS | 0 | 45,601 | 293,144 | 239,545 | 0 | 110,559 | 313,251 | 1,548 | 0 | 644,928 | 0 | 404,856 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 689,077 | 4,429,694 | 3,619,759 | 0 | 1,670,658 | 4,733,531 | 23,389 | 0 | 9,745,505 | 0 | 6,117,783 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Turkeys sold, number | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 242 | 0 | 0 | 0 | 123,427 |
| Wet Manure Weight, Tons | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 6,526 |
| N, LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 338 | 0 | 0 | 0 | 172,181 |
| P, LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 125 | 0 | 0 | 0 | 63,874 |
| K, LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 131 | 0 | 0 | 0 | 66,651 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 338 | 0 | 0 | 0 | 172,181 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL UNITS POULTRY** | | | | | | | | | | | | |
| Wet Manure Weight, Tons | 0 | 7,114 | 42,087 | 30,036 | 0 | 11,747 | 33,283 | 199 | 0 | 87,779 | 0 | 65,109 |
| N, DRY LBS | 0 | 184,867 | 1,093,326 | 779,093 | 0 | 304,037 | 861,439 | 5,167 | 0 | 2,279,000 | 0 | 1,694,176 |
| P, DRY LBS | 0 | 55,474 | 322,423 | 222,639 | 0 | 82,919 | 234,938 | 1,491 | 0 | 664,213 | 0 | 513,459 |
| K, DRY LBS | 0 | 66,874 | 395,708 | 282,525 | 0 | 110,559 | 313,251 | 1,883 | 0 | 825,445 | 0 | 617,450 |
| Total coliform, $x10^{10}$ cfu | 0 | 3,545,517 | 17,094,126 | 7,163,384 | 0 | 0 | 0 | 34,098 | 0 | 30,086,212 | 0 | 24,323,843 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 930,172 | 5,592,095 | 4,106,869 | 0 | 1,670,658 | 4,733,531 | 26,046 | 0 | 11,791,368 | 0 | 7,943,985 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 524,736 | 2,529,931 | 1,060,181 | 0 | 0 | 0 | 5,046 | 0 | 4,452,759 | 0 | 3,599,929 |
| **TOTAL FOR POULTRY AND NONPOULTRY TOTAL UNITS FOR WASHINGTON COUNTY, ARKANSAS** | | | | | | | | | | | | |
| Wet Manure Weight, Tons | 5,467 | 22,270 | 211,668 | 76,906 | 18 | 23,445 | 78,263 | 388 | 0 | 240,688 | 6,415 | 306,070 |
| N, DRY LBS | 64,725 | 364,354 | 3,138,873 | 1,332,909 | 411 | 442,098 | 1,392,698 | 7,386 | 0 | 4,082,587 | 75,582 | 4,591,055 |
| P, DRY LBS | 17,375 | 103,387 | 943,348 | 370,812 | 67 | 119,936 | 377,098 | 2,079 | 0 | 1,159,508 | 20,251 | 1,382,378 |
| K, DRY LBS | 40,026 | 179,656 | 1,615,044 | 630,345 | 269 | 196,820 | 646,426 | 3,277 | 0 | 1,942,898 | 47,477 | 2,352,165 |
| Total coliform, $x10^{10}$ cfu | 5,409,704 | 23,910,968 | 182,895,975 | 69,325,295 | 0 | 14,378,664 | 58,898,712 | 379,597 | 0 | 312,772,556 | 8,682,929 | 322,036,915 |
| Fecal coliform, $x10^{10}$ cfu | 2,428,727 | 7,379,394 | 59,781,145 | 24,136,780 | 1,164 | 6,721,750 | 23,926,845 | 104,382 | 0 | 70,077,240 | 2,728,020 | 85,350,531 |
| Fecal streptococcus, $x10^{10}$ cfu | 2,611,583 | 8,185,978 | 482,879,011 | 24,729,145 | 0 | 5,802,538 | 22,549,618 | 104,476 | 0 | 183,770,551 | 3,242,687 | 650,385,447 |

**Table D-A3: Livestock numbers and manure production in IRW by zip code and summarized for Washington County, Arkansas**

| | Washington County | | | | | | | | Washington County |
|---|---|---|---|---|---|---|---|---|---|
| Zip Code | 72756 | 72761 | 72762 | 72764 | 72765 | 72766 | 72769 | 72770 | Study Area |
| Percent in County | 0.40% | 0.71% | 87.82% | 92.30% | 100.00% | 100.00% | 100.00% | 100.00% | Total |
| Percent Relevant | 25.00% | 100.00% | 100.00% | 25.00% | 100.00% | 100.00% | 100.00% | 100.00% | |
| Farms by size , All farms | 0.20 | 2.14 | 263.46 | 56.53 | 20.00 | 10.00 | 89.00 | 15.00 | 1,626 |
| Percent of county farms in zip code area | 0.01% | 0.08% | 9.41% | 2.02% | 0.71% | 0.36% | 3.18% | 0.54% | 58.07% |
| Land in farms, acres | 26.00 | 281.53 | 34,592.11 | 7,422.84 | 2,625.99 | 1,312.99 | 11,685.64 | 1,969.49 | 213,477 |
| Cattle and calves inventroy, number | 8 | 81 | 11,367 | 2,265 | 768 | 329 | 4,607 | 439 | 67,375 |
| Beef cow inventory, number | 4 | 43 | 6,199 | 1,176 | 458 | 196 | 2,386 | 229 | 35,713 |
| Wet Manure Weight, Tons | 44 | 492 | 71,466 | 13,562 | 5,274 | 2,260 | 27,503 | 2,637 | 411,706 |
| N, DRY LBS | 521 | 5,770 | 837,876 | 159,001 | 61,839 | 26,502 | 322,445 | 30,919 | 4,826,900 |
| P, DRY LBS | 141 | 1,561 | 226,719 | 43,024 | 16,733 | 7,171 | 87,250 | 8,366 | 1,306,102 |
| K, DRY LBS | 322 | 3,564 | 517,512 | 98,206 | 38,195 | 16,369 | 199,157 | 19,097 | 2,981,321 |
| Total coliform, $x10^{16}$ cfu | 44,456 | 492,185 | 71,465,923 | 13,561,825 | 5,274,483 | 2,260,493 | 27,502,659 | 2,637,241 | 411,706,187 |
| Fecal coliform, $x10^{16}$ cfu | 19,929 | 220,634 | 32,036,448 | 6,079,439 | 2,364,423 | 1,013,324 | 12,328,778 | 1,182,212 | 184,557,946 |
| Fecal streptococcus, $x10^{16}$ cfu | 21,462 | 237,606 | 34,500,790 | 6,547,088 | 2,546,302 | 1,091,272 | 13,277,146 | 1,273,151 | 198,754,711 |
| Milk cow inventory, number | 0 | 5 | 236 | 0 | 0 | 0 | 430 | 0 | 1,694 |
| Wet Manure Weight, Tons | 0 | 76 | 3,365 | 0 | 0 | 0 | 6,131 | 0 | 24,136 |
| N, DRY LBS | 0 | 797 | 35,217 | 0 | 0 | 0 | 64,162 | 0 | 252,590 |
| P, DRY LBS | 0 | 167 | 7,356 | 0 | 0 | 0 | 13,403 | 0 | 52,763 |
| K, DRY LBS | 0 | 514 | 22,695 | 0 | 0 | 0 | 41,349 | 0 | 162,780 |
| Total coliform, $x10^{16}$ cfu | 0 | 885,797 | 39,130,110 | 0 | 0 | 0 | 71,291,479 | 0 | 280,655,838 |
| Fecal coliform, $x10^{16}$ cfu | 0 | 12,755 | 563,474 | 0 | 0 | 0 | 1,026,597 | 0 | 4,041,444 |
| Fecal streptococcus, $x10^{16}$ cfu | 0 | 74,407 | 3,286,929 | 0 | 0 | 0 | 5,988,484 | 0 | 23,575,090 |
| Other Cattle and Calves inventory, number | 4 | 33 | 4,931 | 1,089 | 310 | 133 | 1,791 | 210 | 29,968 |
| Wet Manure Weight, Tons | 29 | 262 | 39,149 | 8,645 | 2,463 | 1,056 | 14,218 | 1,667 | 237,909 |
| N, DRY LBS | 346 | 3,067 | 458,987 | 101,349 | 28,880 | 12,377 | 166,692 | 19,545 | 2,789,276 |
| P, DRY LBS | 93 | 830 | 124,197 | 27,424 | 7,815 | 3,349 | 45,105 | 5,289 | 754,745 |
| K, DRY LBS | 213 | 1,894 | 283,492 | 62,598 | 17,838 | 7,645 | 102,957 | 12,072 | 1,722,788 |
| Total coliform, $x10^{16}$ cfu | 29,470 | 261,611 | 39,148,906 | 8,644,503 | 2,463,333 | 1,055,714 | 14,217,832 | 1,667,061 | 237,908,845 |
| Fecal coliform, $x10^{16}$ cfu | 13,211 | 117,274 | 17,549,509 | 3,875,122 | 1,104,253 | 473,251 | 6,373,511 | 747,303 | 106,648,792 |
| Fecal streptococcus, $x10^{16}$ cfu | 14,227 | 126,295 | 18,899,472 | 4,173,209 | 1,189,195 | 509,655 | 6,863,781 | 804,788 | 114,852,546 |
| Hogs and pigs inventory, number | 5 | 0 | 0 | 1,043 | 0 | 0 | 0 | 0 | 21,784 |
| Wet Manure Weight, Tons | 19 | 0 | 0 | 4,341 | 0 | 0 | 0 | 0 | 90,655 |
| N, DRY LBS | 233 | 0 | 0 | 53,743 | 0 | 0 | 0 | 0 | 1,122,401 |
| P, DRY LBS | 81 | 0 | 0 | 18,603 | 0 | 0 | 0 | 0 | 388,523 |
| K, DRY LBS | 130 | 0 | 0 | 29,972 | 0 | 0 | 0 | 0 | 625,954 |
| Total coliform, $x10^{16}$ cfu | 9,406 | 0 | 0 | 2,170,377 | 0 | 0 | 0 | 0 | 45,327,719 |
| Fecal coliform, $x10^{16}$ cfu | 3,583 | 0 | 0 | 826,810 | 0 | 0 | 0 | 0 | 17,267,703 |
| Fecal streptococcus, $x10^{16}$ cfu | 107,494 | 0 | 0 | 24,804,306 | 0 | 0 | 0 | 0 | 518,031,076 |
| Hogs and pigs other inventory, number | 19 | 114 | 0 | 0 | 0 | 0 | 0 | 0 | 57,922 |
| Wet Manure Weight, Tons | 36 | 215 | 0 | 0 | 0 | 0 | 0 | 0 | 108,792 |
| N, DRY LBS | 449 | 2,658 | 0 | 0 | 0 | 0 | 0 | 0 | 1,346,948 |
| P, DRY LBS | 156 | 920 | 0 | 0 | 0 | 0 | 0 | 0 | 466,251 |
| K, DRY LBS | 251 | 1,483 | 0 | 0 | 0 | 0 | 0 | 0 | 751,182 |
| Total coliform, $x10^{16}$ cfu | 18,145 | 107,357 | 0 | 0 | 0 | 0 | 0 | 0 | 54,395,972 |
| Fecal coliform, $x10^{16}$ cfu | 6,912 | 40,898 | 0 | 0 | 0 | 0 | 0 | 0 | 20,722,275 |
| Fecal streptococcus, $x10^{16}$ cfu | 207,369 | 1,226,934 | 0 | 0 | 0 | 0 | 0 | 0 | 621,668,249 |
| Sheep and lambs inventory, number | 0 | 1 | 135 | 0 | 0 | 0 | 0 | 0 | 573 |
| Wet Manure Weight, Tons | 0 | 1 | 98 | 0 | 0 | 0 | 0 | 0 | 418 |
| N, DRY LBS | 2 | 14 | 2,064 | 0 | 0 | 0 | 0 | 0 | 8,787 |
| P, DRY LBS | 0 | 3 | 428 | 0 | 0 | 0 | 0 | 0 | 1,820 |
| K, DRY LBS | 2 | 11 | 1,572 | 0 | 0 | 0 | 0 | 0 | 6,695 |
| Total coliform, $x10^{16}$ cfu | 43 | 306 | 44,225 | 0 | 0 | 0 | 0 | 0 | 188,301 |
| Fecal coliform, $x10^{16}$ cfu | 96 | 681 | 98,278 | 0 | 0 | 0 | 0 | 0 | 418,447 |
| Fecal streptococcus, $x10^{16}$ cfu | 134 | 953 | 137,590 | 0 | 0 | 0 | 0 | 0 | 585,826 |
| Horses and ponies of all ages inventory, number | 0 | 4 | 440 | 110 | 41 | 35 | 124 | 35 | 2,948 |
| Wet Manure Weight, Tons | 4 | 37 | 4,505 | 1,128 | 422 | 362 | 1,267 | 362 | 30,185 |
| N, DRY LBS | 48 | 434 | 52,997 | 13,270 | 4,970 | 4,260 | 14,909 | 4,260 | 355,119 |
| P, DRY LBS | 11 | 103 | 12,543 | 3,141 | 1,176 | 1,008 | 3,529 | 1,008 | 84,045 |
| K, DRY LBS | 40 | 361 | 44,164 | 11,058 | 4,141 | 3,550 | 12,424 | 3,550 | 295,933 |
| Total coliform, $x10^{16}$ cfu | 35,404 | 317,905 | 38,864,472 | 9,731,217 | 3,644,504 | 3,123,861 | 10,933,513 | 3,123,861 | 260,420,950 |
| Fecal coliform, $x10^{16}$ cfu | 7 | 61 | 7,420 | 1,858 | 696 | 596 | 2,087 | 596 | 49,717 |
| Fecal streptococcus, $x10^{16}$ cfu | 4,184 | 37,571 | 4,593,074 | 1,150,053 | 430,714 | 369,184 | 1,292,142 | 369,184 | 30,777,021 |
| **TOTAL UNITS, NONPOULTRY, DOMESTIC LIVESTOCK** | | | | | | | | | |
| Wet Manure Weight, Tons | 133 | 1,082 | 118,583 | 27,675 | 8,160 | 3,678 | 49,119 | 4,666 | 903,802 |
| N, DRY LBS | 1,599 | 12,741 | 1,387,141 | 327,363 | 95,689 | 43,139 | 568,208 | 54,724 | 10,702,022 |
| P, DRY LBS | 483 | 3,584 | 371,243 | 92,191 | 25,724 | 11,529 | 149,286 | 14,663 | 3,054,251 |
| K, DRY LBS | 958 | 7,827 | 869,436 | 201,835 | 60,174 | 27,564 | 355,887 | 34,719 | 6,546,654 |
| Total coliform, $x10^{16}$ cfu | 136,924 | 2,065,160 | 188,653,637 | 34,107,922 | 11,382,319 | 6,440,067 | 123,945,483 | 7,428,163 | 1,290,603,811 |
| Fecal coliform, $x10^{16}$ cfu | 43,738 | 392,303 | 50,255,129 | 10,783,229 | 3,469,372 | 1,487,172 | 19,730,974 | 1,930,111 | 333,706,323 |
| Fecal streptococcus, $x10^{16}$ cfu | 354,870 | 1,703,766 | 61,417,855 | 36,674,655 | 4,166,211 | 1,970,111 | 27,421,553 | 2,447,122 | 1,508,244,519 |

**Table D-A3: Livestock numbers and manure production in IRW by zip code and summarized for Washington County, Arkansas**

| | Washington County | | | | | | | | Washington County |
|---|---|---|---|---|---|---|---|---|---|
| Zip Code | 72756 | 72761 | 72762 | 72764 | 72765 | 72766 | 72769 | 72770 | Study Area |
| Percent in County | 0.40% | 0.71% | 87.82% | 92.30% | 100.00% | 100.00% | 100.00% | 100.00% | Total |
| Percent Relevant | 25.00% | 100.00% | 100.00% | 25.00% | 100.00% | 100.00% | 100.00% | 100.00% | |
| Farms by size , All farms | 0.20 | 2.14 | 263.46 | 56.53 | 20.00 | 10.00 | 89.00 | 15.00 | 1,626 |
| Percent of county farms in zip code area | 0.01% | 0.08% | 9.41% | 2.02% | 0.71% | 0.36% | 3.18% | 0.54% | 58.07% |
| Land in farms, acres | 26.00 | 281.53 | 34,592.11 | 7,422.84 | 2,625.99 | 1,312.99 | 11,685.64 | 1,969.49 | 213,477 |
| Whitetail Deer population | 0.79 | 8.58 | 1,054.56 | 226.29 | 80.05 | 40.03 | 356.24 | 60.04 | 6,508 |
| Wet Manure Weight, Tons | 1 | 6 | 770 | 165 | 58 | 29 | 260 | 44 | 4,751 |
| N, DRY LBS | 13 | 141 | 17,321 | 3,717 | 1,315 | 657 | 5,851 | 986 | 106,894 |
| P, DRY LBS | 2 | 22 | 2,694 | 578 | 205 | 102 | 910 | 153 | 16,628 |
| K, DRY LBS | 9 | 94 | 11,547 | 2,478 | 877 | 438 | 3,901 | 657 | 71,263 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 14 | 157 | 19,246 | 4,130 | 1,461 | 731 | 6,501 | 1,096 | 118,771 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wild Turkey population | 0.15 | 1.66 | 204.17 | 43.81 | 15.50 | 7.75 | 68.97 | 11.62 | 1,260 |
| Wet Manure Weight, Tons | 0 | 0 | 26 | 6 | 2 | 1 | 9 | 1 | 162 |
| N, DRY LBS | 1 | 6 | 693 | 149 | 53 | 26 | 234 | 39 | 4,277 |
| P, DRY LBS | 0 | 2 | 257 | 55 | 20 | 10 | 87 | 15 | 1,587 |
| K, DRY LBS | 0 | 2 | 268 | 58 | 20 | 10 | 91 | 15 | 1,656 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 1 | 6 | 693 | 149 | 53 | 26 | 234 | 39 | 4,277 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Geese population, goose days in zip code | 4.78 | 51.79 | 6,363.19 | 1,365.43 | 483.05 | 241.52 | 2,149.56 | 362.29 | 39,269 |
| Wet Manure Weight, Tons | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 7 |
| N, DRY LBS | 0 | 0 | 19 | 4 | 1 | 1 | 7 | 1 | 120 |
| P, DRY LBS | 0 | 0 | 7 | 2 | 1 | 0 | 2 | 0 | 45 |
| K, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 23 | 254 | 31,180 | 6,691 | 2,367 | 1,183 | 10,533 | 1,775 | 192,418 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Duck population, duck days in zip code | 0.02 | 0.27 | 32.76 | 7.03 | 2.49 | 1.24 | 11.07 | 1.87 | 202 |
| Wet Manure Weight, Tons | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| N, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| P, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| K, DRY LBS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 0 | 8 | 2 | 1 | 0 | 3 | 0 | 49 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 18 | 4 | 1 | 1 | 6 | 1 | 109 |
| **TOTAL UNITS, NONPOULTRY, WILDLIFE** | | | | | | | | | |
| Wet Manure Weight, Tons | 1 | 6 | 797 | 171 | 61 | 30 | 269 | 45 | 4,920 |
| N, DRY LBS | 14 | 147 | 18,034 | 3,870 | 1,369 | 684 | 6,092 | 1,027 | 111,291 |
| P, DRY LBS | 2 | 24 | 2,959 | 635 | 225 | 112 | 1,000 | 168 | 18,260 |
| K, DRY LBS | 9 | 96 | 11,816 | 2,535 | 897 | 448 | 3,992 | 673 | 72,919 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 38 | 416 | 51,126 | 10,971 | 3,881 | 1,941 | 17,271 | 2,911 | 315,515 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 18 | 4 | 1 | 1 | 6 | 1 | 109 |
| Layers 20 weeks old and older inventory, number | 300 | 2,983 | 158,151 | 27,703 | 0 | 0 | 120,057 | 0 | 1,457,898 |
| Wet Manure Weight, Tons | 14 | 137 | 7,247 | 1,269 | 0 | 0 | 5,501 | 0 | 66,807 |
| N, LBS | 361 | 3,589 | 190,236 | 33,323 | 0 | 0 | 144,414 | 0 | 1,753,676 |
| P, LBS | 129 | 1,282 | 67,942 | 11,901 | 0 | 0 | 51,576 | 0 | 626,313 |
| K, LBS | 129 | 1,282 | 67,942 | 11,901 | 0 | 0 | 51,576 | 0 | 626,313 |
| Total coliform, $x10^{10}$ cfu | 21,490 | 213,612 | 11,323,591 | 1,983,541 | 0 | 0 | 8,596,061 | 0 | 104,385,474 |
| Fecal coliform, $x10^{10}$ cfu | 1,461 | 14,526 | 770,004 | 134,881 | 0 | 0 | 584,532 | 0 | 7,098,212 |
| Fecal streptococcus, $x10^{10}$ cfu | 3,181 | 31,615 | 1,675,891 | 293,564 | 0 | 0 | 1,272,217 | 0 | 15,449,050 |
| , Broilers and other meat type chickens sold, number | 7,103 | 127,565 | 13,576,871 | 3,181,707 | 0 | 0 | 2,089,174 | 0 | 65,545,481 |
| Wet Manure Weight, Tons | 33 | 598 | 63,616 | 14,908 | 0 | 0 | 9,789 | 0 | 307,122 |
| N, LBS | 861 | 15,470 | 1,646,535 | 385,862 | 0 | 0 | 253,365 | 0 | 7,949,028 |
| P, LBS | 235 | 4,219 | 449,055 | 105,235 | 0 | 0 | 69,099 | 0 | 2,167,917 |
| K, LBS | 313 | 5,626 | 598,740 | 140,313 | 0 | 0 | 92,133 | 0 | 2,890,556 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 4,734 | 85,009 | 9,047,560 | 2,120,274 | 0 | 0 | 1,392,215 | 0 | 43,679,187 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Turkeys sold, number | 0 | 0 | 0 | 34,221 | 0 | 0 | 0 | 0 | 157,891 |
| Wet Manure Weight, Tons | 0 | 0 | 0 | 1,809 | 0 | 0 | 0 | 0 | 8,348 |
| N, LBS | 0 | 0 | 0 | 47,739 | 0 | 0 | 0 | 0 | 220,258 |
| P, LBS | 0 | 0 | 0 | 17,710 | 0 | 0 | 0 | 0 | 81,709 |
| K, LBS | 0 | 0 | 0 | 18,480 | 0 | 0 | 0 | 0 | 85,261 |
| Total coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fecal coliform, $x10^{10}$ cfu | 0 | 0 | 0 | 47,739 | 0 | 0 | 0 | 0 | 220,258 |
| Fecal streptococcus, $x10^{10}$ cfu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL UNITS POULTRY** | | | | | | | | | |
| Wet Manure Weight, Tons | 47 | 734 | 70,863 | 17,987 | 0 | 0 | 15,291 | 0 | 382,277 |
| N, DRY LBS | 1,222 | 19,059 | 1,836,771 | 466,924 | 0 | 0 | 397,778 | 0 | 9,922,962 |
| P, DRY LBS | 364 | 5,501 | 516,997 | 134,846 | 0 | 0 | 120,676 | 0 | 2,875,938 |
| K, DRY LBS | 442 | 6,907 | 666,682 | 170,694 | 0 | 0 | 143,709 | 0 | 3,602,130 |
| Total coliform, $x10^{10}$ cfu | 21,490 | 213,612 | 11,323,591 | 1,983,541 | 0 | 0 | 8,596,061 | 0 | 104,385,474 |
| Fecal coliform, $x10^{10}$ cfu | 6,195 | 99,534 | 9,817,564 | 2,302,894 | 0 | 0 | 1,976,747 | 0 | 50,997,658 |
| Fecal streptococcus, $x10^{10}$ cfu | 3,181 | 31,615 | 1,675,891 | 293,564 | 0 | 0 | 1,272,217 | 0 | 15,449,050 |
| **TOTAL FOR POULTRY AND NONPOULTRY TOTAL UNITS FOR WASHINGTON COUNTY, ARKANSAS** | | | | | | | | | |
| Wet Manure Weight, Tons | 181 | 1,823 | 190,244 | 45,833 | 8,221 | 3,709 | 64,679 | 4,712 | 1,290,999 |
| N, DRY LBS | 2,835 | 31,947 | 3,241,947 | 798,156 | 97,058 | 43,824 | 972,079 | 55,751 | 20,736,275 |
| P, DRY LBS | 849 | 9,109 | 891,198 | 227,672 | 25,948 | 11,641 | 270,961 | 14,832 | 5,948,449 |
| K, DRY LBS | 1,409 | 14,830 | 1,547,933 | 375,064 | 61,071 | 28,012 | 503,588 | 35,392 | 10,221,702 |
| Total coliform, $x10^{10}$ cfu | 158,414 | 2,278,773 | 199,977,227 | 36,091,463 | 11,382,319 | 6,440,067 | 132,541,543 | 7,428,163 | 1,394,989,285 |
| Fecal coliform, $x10^{10}$ cfu | 49,971 | 492,254 | 60,123,820 | 13,097,093 | 3,473,253 | 1,489,112 | 21,724,992 | 1,933,022 | 385,019,496 |
| Fecal streptococcus, $x10^{10}$ cfu | 358,051 | 1,735,381 | 63,093,764 | 36,968,223 | 4,166,212 | 1,970,112 | 28,693,776 | 2,447,123 | 1,523,693,678 |

# Appendix G

**Manure Produced on a Wet Basis and Dry Basis and Adjusted for Fermentation loss (composting effect) during Accumulation.**

**Manure as produced on a wet basis and dry basis and as adjusted for direct and indirect deposit and composting.**

| Quantities before adjustment is made | | Dry Manure | | Direct or Indirect Deposit/Composting | | | Quantities adjusted for Indirect Deposit/Composting | |
|---|---|---|---|---|---|---|---|---|
| For Study Area | As Produced Total | Percent Moisture | Tons Produced, Dry Wt Basis | Method of Deposit/Harvest Direct | Indirect | Delay Factor | Wet Manure Tons | Tons Produced, Dry Wt Basis |
| Beef cow inventory, number | 103,737 | | | 100.00% | 0.00% | | | |
| Wet Manure Weight, Tons | 1,195,902 | 88.40% | 138,725 | | | | 1,195,902 | 138,725 |
| Milk cow inventory, number | 10,829 | | | 67.00% | 33.00% | Note 1 | | |
| Wet Manure Weight, Tons | 154,296 | 87.50% | 19,287 | | | 16.17% | 129,347 | 16,168 |
| Other Cattle and Calves inventory, number | 85,019 | | | 100.00% | 0.00% | | | |
| Wet Manure Weight, Tons | 674,945 | 88.40% | 78,294 | | | | 674,945 | 78,294 |
| Hogs and pigs inventory, number | 22,146 | | | 0.00% | 100.00% | Note 2 | | |
| Wet Manure Weight, Tons | 92,164 | 90.00% | 9,216 | | | 50.00% | 46,082 | 4,608 |
| Hogs and pigs other inventory, number | 143,830 | | | 0.00% | 100.00% | Note 2 | | |
| Wet Manure Weight, Tons | 270,147 | 90.00% | 27,015 | | | 50.00% | 135,073 | 13,507 |
| Sheep and lambs inventory, number | 1,930 | | | 100.00% | 0.00% | | | |
| Wet Manure Weight, Tons | 1,409 | 75.00% | 352 | | | | 1,409 | 352 |
| Horses and ponies of all ages inventory, number | 8,194 | | | 100.00% | 0.00% | | | |
| Wet Manure Weight, Tons | 83,892 | 78.00% | 18,456 | | | | 83,892 | 18,456 |
| **TOTAL UNITS, NONPOULTRY, DOMESTIC LIVESTOCK** | | | | | | | | |
| Wet Manure Weight, Tons | 2,472,755 | | 291,345 | | | | 2,266,649 | 270,110 |
| Whitetail Deer population | 29,400 | | | 100.00% | 0.00% | | | |
| Wet Manure Weight, Tons | 21,421 | 75.00% | 5,355 | | | | 21,421 | 5,355 |
| Wild Turkey population | 3,564 | | | 100.00% | 0.00% | | | |
| Wet Manure Weight, Tons | 459 | 74.47% | 117 | | | | 459 | 117 |
| Geese population, goose days in study area | 128,500 | | | 100.00% | 0.00% | | | |
| Wet Manure Weight, Tons | 24 | 71.82% | 7 | | | | 24 | 7 |
| Duck population, duck days in study area | 167,900 | | | 100.00% | 0.00% | | | |
| Wet Manure Weight, Tons | 18 | 71.82% | 5 | | | | 18 | 5 |
| **TOTAL UNITS,NONPOULTRY, WILDLIFE** | | | | | | | | |
| Wet Manure Weight, Tons | 21,922 | | 5,484 | | | | 21,922 | 5,484 |
| Layers 20 weeks old and older inventory, number | 2,469,038 | | | 0.00% | 100.00% | Note 3 | | |
| Wet Manure Weight, Tons | 113,141 | 75.00% | 28,285 | | | 20.66% | 89,913 | 44,957 |
| , Broilers and other meat type chickens sold, number | 147,522,269 | | | 0.00% | 100.00% | Note 4 | | |
| Wet Manure Weight, Tons | 691,234 | 75.00% | 172,809 | | | 31.17% | 495,600 | 118,944 |
| Turkeys sold, number | 669,453 | | | 0.00% | 100.00% | Note 5 | | |
| Wet Manure Weight, Tons | 35,397 | 75.00% | 8,849 | | | 0.39% | 25,926 | 8,815 |
| **TOTAL UNITS POULTRY** | | | | | | | | |
| Wet Manure Weight, Tons | 839,773 | | 209,943 | | | | 611,440 | 172,716 |
| **TOTAL FOR POULTRY AND NONPOULTRY** | | | | | | | | |
| Wet Manure Weight, Tons | 3,334,449 | | 506,772 | | | | 2,900,011 | 448,310 |

Notes for above table.

Note 1: On dairy cattle: A 49% reduction factor on the one-third of the manure that is piled outside barn and holding area. Sources: Agricultural Waste Management Field Handbook, Chapter 4 Agricultural Waste Characterics, USDA, SCS and conversations with various dairy specialists across the region.

Note 2: On swine: A 50% reduction factor on manure estimates because of the use of the lagoon when applied. Sources: Agricultural Waste Management Field Handbook, Chapter 4 Agricultural Waste Characterics, USDA, SCS.

Note 3: Related to Layers - Source Agricultural Waste Management Field Handbook, Chapter 4 Agricultural Waste Characterics, USDA, SCS

| | | | |
|---|---|---|---|
| Weight of manure | 60.50 | lb/d/1000# animal | |
| Weight of litter | 24.00 | lb/d/1000# animal | |
| Total solids of manure | 15.10 | lb/d/1000# animal | |
| Total solids of litter | 12.00 | lb/d/1000# animal | |
| Moisture of manure | 75.00% | | |
| Moisture of litter | 50.00% | | |
| Delay factor (loss in manure on dry matter basis) | 20.53% | 1-(12.00/15.10) | |
| Assume no organic matter added | | | |
| Weight of manure at cleanout @75% moisture | 48.08 | lb/d/1000# animal | 60.5*12.00/15.10 |
| Ratio of cleanout to produced | 0.7947 | 48.08/60.5 | |

Note 4: Related to Broilers - Source Agricultural Waste Management Field Handbook, Chapter 4 Agricultural Waste Characterics, USDA, SCS

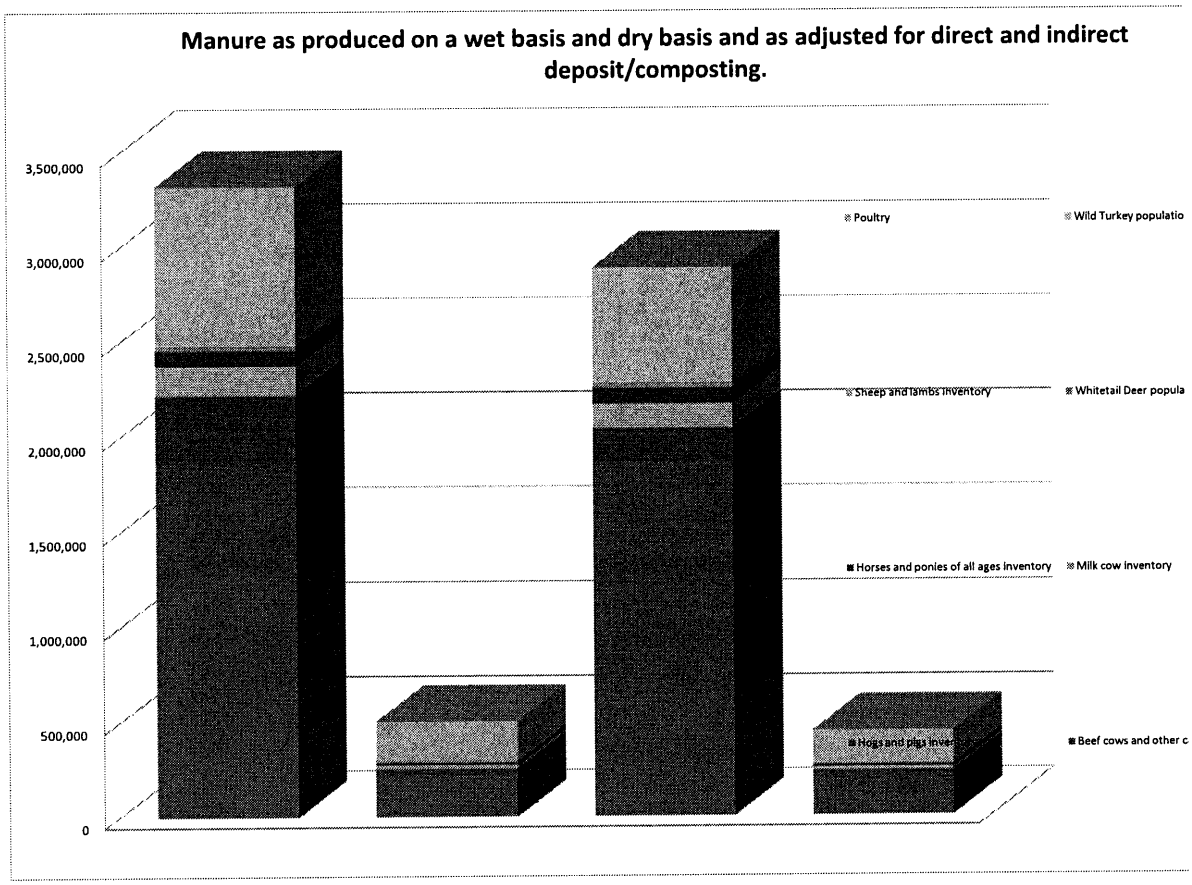
| | | | |
|---|---|---|---|
| Weight of manure | 80.00 | lb/d/1000# animal | |
| Weight of litter | 24.00 | lb/d/1000# animal | |
| Total solids of manure | 20.00 | lb/d/1000# animal | |
| Total solids of litter | 26.50 | lb/d/1000# animal | |
| Moisture of manure | 75.00% | | |
| Moisture of litter | 24.00% | | |
| Organic matter of litter | 6.50 | lb/d/1000# animal | 26.5-20.0 |
| Litter percent organic matter | 24.53% | 6.5/26.5 | |
| Manure in litter at cleanout (at 24% moisture) | 18.11 | lb/d/1000# animal | (1-.2453)*24 |
| Manure in litter at cleanout (dry matter basis) | 13.77 | lb/d/1000# animal | 18.11-(1-.240) |
| Ratio of manure at cleanout to produced | 0.6883 | 13.7/(80.0*(1-.75)) | |
| Delay factor (Dry Matter Loss) | 0.3117 | 1-.6883 | |

Note 5: Related to Turkeys - Source Agricultural Waste Management Field Handbook, Chapter 4 Agricultural Waste Characterics, USDA, SCS

| | | | |
|---|---|---|---|
| Weight of manure | 43.60 | lb/d/1000# animal | |
| Weight of litter | 24.30 | lb/d/1000# animal | |
| Total solids of manure | 10.90 | lb/d/1000# animal | |
| Total solids of litter | 16.10 | lb/d/1000# animal | |
| Moisture of manure | 75.00% | | |
| Moisture of litter | 34.00% | | |
| Organic matter of litter | 5.20 | lb/d/1000# animal | 16.1-10.9 |
| Litter percent organic matter | 32.30% | 5.2/16.10 | |
| Manure in litter at cleanout (at 24% moisture) | 16.45 | lb/d/1000# animal | (1-..323)*24.3 |
| Manure in litter at cleanout (dry matter basis) | 10.86 | lb/d/1000# animal | |
| Ratio of manure at cleanout to produced | 0.9961 | 11.86/(43.6*(1-.75)) | |

**Manure as produced on a wet basis and dry basis and as adjusted for direct and indirect deposit/composting.**

| | Study Area | | | |
|---|---|---|---|---|
| | At time of production | At time of production | At time of deposit/composting | At time of deposit/composting |
| | Wet Manure, tons | Dry Manure, Tons | Wet Manure, tons | Dry Manure, Tons |
| Beef cows and other cattle and calves | 1,870,847 | 217,018 | 1,870,847 | 217,018 |
| Hogs and pigs inventory | 362,311 | 36,231 | 181,155 | 18,116 |
| Milk cow inventory | 154,296 | 19,287 | 129,347 | 16,168 |
| Horses and ponies of all ages inventory | 83,892 | 18,456 | 83,892 | 18,456 |
| Whitetail Deer population | 21,421 | 5,355 | 21,421 | 5,355 |
| Sheep and lambs inventory | 1,409 | 352 | 1,409 | 352 |
| Wild Turkey population | 459 | 117 | 459 | 117 |
| Geese and Duck population | 43 | 12 | 43 | 12 |
| Poultry | 839,773 | 209,943 | 611,440 | 172,716 |
| Total | 3,334,449 | 506,772 | 2,900,011 | 448,310 |


Manure as produced on a wet basis and dry basis and as adjusted for direct and indirect deposit/composting.
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Poultry
Wild Turkey populatio
Sheep and lambs inventory
Whitetail Deer popula
Horses and ponies of all ages inventory
Milk cow inventory
Hogs and pigs inve
Beef cows and other c