# APPENDIX

**Table A-1. Original capital investment per head capacity by housing technology and feedlot capacity without imposing water pollution control rules[a]**

| Housing technology | Feedlot capacity (head) | | |
|---|---|---|---|
| | 100 | 500 | 900 |
| Drylot paved | $336.50 | $255.23 | $253.78 |
| Drylot unpaved | $320.57 | $238.74 | $237.23 |
| Open lot | $268.91 | $186.00 | $184.37 |
| Cold confinement, solid floor | $346.72 | $265.99 | $264.58 |
| Cold confinement, slotted floor | $436.83 | $334.17 | $328.15 |

[a] The investments in Tables A-1 and A-2 are on a per-head basis for a one-time feedlot capacity. To find the amount of capital investment per head of beef sold, the following calculation would be made:

$$\text{Investment per head sold} = \frac{\text{Investment per head capacity}}{\text{Turnover rate} \times \text{life of investment}}$$

For drylot paved and unpaved facilities, the turnover rate is approximately 1.22 for the ration used in this study. For open lot facilities it is approximately 1.10, and for the confined facilities the turnover rate is approximately 1.25.

Investment per head capacity includes the total capital outlay for feed storage facilities, lot and buildings, the feed handling system, and waste disposal equipment and facilities.

**Table A-2. Additional capital investment per head capacity required to comply with alternative water pollution control rules by housing technology and feedlot capacity, 1974 prices[a]**

| Water pollution control rule and housing technology | Feedlot capacity (head) | | |
|---|---|---|---|
| | 100 | 500 | 900 |
| 1. Rule: control runoff from a 10-year, 24-hour rainfall event | | | |
| Technology: | | | |
| a. Drylot paved | $26.56 | $ 6.86 | $ 4.55 |
| b. Drylot unpaved | $32.33 | $12.17 | $ 9.76 |
| c. Open lot | $34.72 | $14.42 | $11.98 |
| d. Cold confinement, solid floor[b] | — | — | — |
| e. Cold confinement, slotted floor[b] | — | — | — |
| 2. Rule: control runoff from a 25-year, 24-hour rainfall event | | | |
| Technology: | | | |
| a. Drylot paved | $26.73 | $ 6.99 | $ 4.67 |
| b. Drylot unpaved | $32.88 | $12.64 | $10.21 |
| c. Open lot | $35.43 | $15.04 | $12.58 |
| d. Cold confinement, solid floor[b] | — | — | — |
| e. Cold confinement, slotted floor[b] | — | — | — |
| 3. Rule: control runoff from a 6-month rainfall event | | | |
| Technology: | | | |
| a. Drylot paved | $28.20 | $ 8.17 | $ 5.78 |
| b. Drylot unpaved | $38.01 | $17.15 | $14.60 |
| c. Open lot | $42.07 | $20.96 | $18.35 |
| d. Cold confinement, solid floor[b] | — | — | — |
| e. Cold confinement, slotted floor[b] | — | — | — |
| 4. Rule: no winter spreading of wastes | | | |
| Technology: | | | |
| a. Drylot paved | $ .96 | $ 3.45 | $ 2.34 |
| b. Drylot unpaved | $ .78 | $ 3.27 | $ 2.17 |
| c. Open lot | $ .68 | $ .68 | $ 2.06 |
| d. Cold confinement, solid floor | $ 2.27 | $ 4.76 | $ 3.44 |
| e. Cold confinement, slotted floor | $ 6.81 | $ 6.13 | $ 4.03 |

[a] Additional capital investments include additional capital outlays for buildings and equipment needed to comply with a rule.

[b] These housing types are not affected by this particular water pollution control rule.

**Table A-3. Average equity per firm for a simulated sample of Michigan feedlots over the 1974-1985 period under four alternative water pollution control rules[a]**

| Year | Average Equity Under | | | |
|---|---|---|---|---|
| | Rule A | Rule B | Rule C | Rule D |
| 1974 | $219,889 | $219,889 | $219,889 | $219,889 |
| 1975 | $245,904 | $245,904 | $245,904 | $245,904 |
| 1976 | $275,773 | $275,764 | $275,674 | $275,569 |
| 1977 | $308,978 | $308,947 | $308,173 | $307,925 |
| 1978 | $347,236 | $347,180 | $346,603 | $346,204 |
| 1979 | $389,104 | $389,023 | $387,965 | $387,395 |
| 1980 | $436,592 | $436,478 | $435,377 | $434,615 |
| 1981 | $488,872 | $488,731 | $487,412 | $486,450 |
| 1982 | $546,899 | $546,728 | $545,097 | $543,913 |
| 1983 | $610,307 | $610,129 | $608,750 | $607,345 |
| 1984 | $678,971 | $678,784 | $677,240 | $675,558 |
| 1985 | $752,931 | $752,736 | $751,544 | $749,626 |

[a] These equity levels are used to compute the "equity loss" incurred by the simulated firms under the alternative water pollution control rules. The "equity loss" refers to the difference between the present value of annual equity changes when no rule is imposed and the present value of annual equity changes under particular water pollution control rule.

**Table A-4. Examples of initial investment costs for two housing systems using the runoff retention system used in simulation model with the capacity to retain a 6-month rainfall**

| | Drylot, unpaved housing system | | |
|---|---|---|---|
| | 100 head feedlot capacity | 500 head feedlot capacity | 900 head feedlot capacity |
| Diversion terrace | $ 140 | $ 700 | $1,260 |
| Settling basin | $ 34 | $ 172 | $ 310 |
| Holding pond and lining | $ 569 | $2,578 | $4,540 |
| Cost of fence | $ 147 | $ 328 | $ 441 |
| Cost of pump | $2,145 | $2,219 | $2,219 |
| Total | $3,035 | $5,997 | $8,770 |
| | **Drylot, paved housing system** | | |
| | 100 head feedlot capacity | 500 head feedlot capacity | 900 head feedlot capacity |
| Diversion terrace | $ 33 | $ 163 | $ 294 |
| Settling basin | $ 10 | $ 41 | $ 72 |
| Holding pond and lining | $ 157 | $ 656 | $1,132 |
| Cost of fence | $ 71 | $ 158 | $ 213 |
| Cost of pump | $2,145 | $2,219 | $2,219 |
| Total | $2,416 | $3,237 | $3,930 |

**Table A-5. Annual costs and costs per pound of beef sold for three feedlot technologies, 500-head capacity**

| | Drylot, unpaved no runoff abatement | Drylot, unpaved runoff abatement for 25-year, 24-hour storm | Cold confinement solid floor |
|---|---|---|---|
| Feeder calves | $128,662 | $128,662 | $131,736 |
| Nondurable inputs: | | | |
| Fertilizer and herbicides | $12,126 | $12,126 | $12,126 |
| Supplement | $ 9,896 | $ 9,896 | $ 9,896 |
| Seed | $ 3,421 | $ 3,421 | $ 3,421 |
| Fuel | $ 1,005 | $ 1,005 | $ 829 |
| Labor | $10,855 | $10,855 | $11,239 |
| Repair | $ 3,079 | $ 3,079 | $ 3,194 |
| Insurance | $ 277 | $ 289 | $ 309 |
| Property tax | $ 5,370 | $ 5,431 | $ 5,512 |
| Interest on short term loan | $17,144 | $17,147 | $17,533 |
| Runoff abatement | $ 0 | $ 452 | $ 0 |
| Total | $ 63,173 | $ 63,701 | $ 64,059 |
| Durable inputs: | | | |
| Silo | $ 3,528 | $ 3,528 | $ 3,528 |
| Moist corn storage | $ 1,895 | $ 1,895 | $ 1,895 |
| Lot and buildings | $ 2,556 | $ 2,556 | $ 3,469 |
| Transport | $ 1,363 | $ 1,363 | $ 1,549 |
| Runoff abatement | $ 0 | $ 407 | $ 0 |
| Crop machinery | $ 4,369 | $ 4,369 | $ 4,369 |
| Total | $ 13,713 | $ 14,119 | $ 14,813 |
| Opportunity costs of land and durables | $ 34,128 | $ 34,160 | $ 34,215 |
| Total annual cost | $239,676 | $240,643 | $244,821 |
| Cost per pound sold | $ 0.375 | $ 0.377 | $ 0.374 |