KS651.0280 Feedlot Assessment

(a) General

Form KS-ENG-17, Feedlot Assessment, provides an assessment of surface water and groundwater quality as it may be affected by animals confined in an outside feeding/holding area. Figure KS2-1 is a completed example of this form. If the results of the assessment show a groundwater or surface water concern, then a Kansas Department of Health and Environment (KDHE) permit may be required.

In making the assessment of the feedlot, there may be conditions that could automatically trigger the requirement for a KDHE permit. In that case, this assessment would not be needed. These feedlot conditions include:

- More than 1000 animal units (AUs)
- Meets National Pollutant Discharge Elimination System (NPDES) definition
- Has one or more ponds, lagoons, pits, or tanks for waste storage
- Has a perennial, intermittent, or ephemeral stream through or adjacent to the feedlot
- Has a daily discharge

When completing Form KS-ENG-17, assess the appropriateness of the rating system (risk factors) for each of the items in Sections A, B, and C.

(b) Instructions and Definitions for Form KS-ENG-17

Complete the blanks (name, legal description, etc.) in the heading area of the form.

The numbers in each section below correspond to the item numbers on the form.

Section A–Surface Water Quality Assessment

1. Capacity: Using the KDHE definition of AUs, determine proposed/existing maximum capacity of the facility. Use the table in Item 1 to determine a risk factor.

2. Pen slope: Determine the slope of the pen area along the longest runoff flow path. The slope is the change in elevation divided by flow length (rise/run) in the same units of measure. It is common practice to express the slope in percent so multiply the rise/run by 100 to get the percent slope. The use of topographic maps or hand level and pacing can help in making this determination. Use the table in Item 2 to determine a risk factor.

3. Utilization: Interview the operator to determine the length of time the animals will be in the facility each year. Use the table in Item 3 to determine a risk factor.

4. Soils between pens and potential surface water: Use the county soil survey or Web Soil Survey to determine the predominant soil type along the flow path. Potential surface water is determined by the soils that are subject to frequent flooding as shown on the county soil survey or Web Soil Survey. The surface water could also be a stream, lake, or pond. Use the table in Item 4 to determine a risk factor.

5. Buffer: Observe the buffer area. The buffer area is that area below the pens where runoff from the pens remains dispersed, solids in the runoff can be collected, and depth of flow does not exceed 3 inches. Use the table in Item 5 to determine a risk factor.

6. Buffer size: Compare the size of the buffer to the existing or proposed pen area. Use the table in Item 6 to determine a risk factor.

7. Slope from pen to potential surface water: Determine the slope from the pen area to the nearest potential surface water along the runoff flow path. Use the methods described in Section A, Item 2 above. The change in elevation is measured from the top of the potential surface water to the bottom elevation of the pens. Use the table in Item 7 to determine a risk factor.

8. Distance from pen to potential surface water: Determine the distance to the nearest potential surface water. This may be the same distance used in Section A, Item 7 as the flow length (run). Use the table in Item 8 to determine a risk factor.

9. Extraneous drainage: This is the area above the confinement area that will allow runoff to flow through the pens and will not or cannot be diverted around the confinement area. Compare the extraneous drainage area to the pen area. Use the table in Item 9 to determine a risk factor.

10. Annual rainfall: Use reference material such as Appendix 10D in Chapter 10 to determine annual rainfall for the county in which the facility is located. Use the table in Item 10 to determine a risk factor.

11. Rainfall intensity: Use reference material such as Appendix 10D in Chapter 10 to determine rainfall intensity. For the purpose of this form, use the 25-year, 24-hour rainfall event. Use the table in Item 11 to determine a risk factor.

Section B–Groundwater Quality Assessment

1. Capacity: Use the same factor as determined in Section A, Item 1.

2. Annual rainfall: Use the same factor as determined in Section A, Item 10.

3. Depth to groundwater: Use the best available information to determine depth to groundwater. Possible sources of information include measuring a nearby well, using the Kansas Geological Survey (KGS) well log database, or interviewing a well driller who is familiar with the area. Use the table in Item 3 to determine a risk factor.

4. Soils receiving runoff: Use the county soil survey or Web Soil Survey to determine the type of soil in the area. It should be the same soil type as in Section A, Item 4. Use the table in Item 4 to determine a risk factor.

5. Distance to nearest well (water, gas, oil) potentially impacted (down gradient): Using maps or a wheel, measure the distance to wells other than those wells used by the facility. Use the table in Item 5 to determine a risk factor for the nearest well.

Section C–Special Conditions

1-4. Answer Items 1 through 4. If any question is answered "Yes," then an assessment may not be needed.

5. Observe the existing/proposed pens and runoff flow path for springs, rock outcrops with groundwater seeps, and other features which—if contaminated by runoff—could cause an environmental problem. If a potential problem is observed enter "Yes."

6. Consult the KDHE publication titled "Kansas Sensitive Groundwater Areas for Wastewater Lagoons" to see if any part of the land on which the feedlot sits is listed.

7. Consult the current KDHE Kansas Surface Water Register to determine if potential surface water is "outstanding natural resource waters," "exceptional state waters," or "special aquatic life use water."

Section D–Evaluation

Section D is self-explanatory.

Figure KS2-1 Example of Form KS-ENG-17

USDA
NRCS

KS-ENG-17
5/14

Feedlot Assessment

Name	Joe Feeder	Ident. No.	
Legal Desc.	Section 16, T5S R15W	County	Middle
Assessed by	I.M. Good	Date	5/15/2014

Instructions for Completion: National Engineering Handbook Part 651, Agricultural Waste Management Field Handbook, Section KS651.0280(b)

Section A–Surface Water Quality Assessment

1. Capacity	Factor	
< 50 animal units (AUs)	1	
50 - 99 AUs	3	
100 - 299 AUs	5	
300 - 499 AUs	7	
500 - 699 AUs	8	Factor= 7
700 - 999 AUs	9	

Remarks: 350 AUs

2. Pen slope	Factor	
< 1%	1	
1 - 1.9%	3	
2 - 2.9%	5	
3 - 3.9%	7	
4 - 4.9%	9	Factor= 5
≥ 5%	10	

Remarks: 2.4%

3. Utilization	Factor	
< 3 months/year	1	
3 - 4 months/year	4	
5 - 6 months/year	6	Factor= 4
≥ 7 months/year	9	

Remarks: 3 months per year

4. Soil between pen and potential surface water	Factor	
Sand	1	
Silty sand	3	
Silty	5	
Silty clay	7	Factor= 7
Clay	9	

Remarks: Harney silt loam

5. Buffer (existing) [1/]	Factor	
Dense cover of grass	1	
Grass w/woody plants	4	
Cultivated crop ground	6	Factor= 4
Bare earth	10	

Remarks: pasture, good

6. Buffer size (existing) [1/]	Factor	
≥ 2X pen area	1	
1X - 1.9X pen area	4	
0.5X - 0.9X pen area	7	Factor= 1
< 0.5X pen area	10	

Remarks: over 2 times

7. Slope from pen to potential surface water	Factor	
< 1%	1	
1 - 1.9%	3	
2 - 2.9%	5	
3 - 3.9%	7	
4 - 4.9%	9	Factor= 3
≥ 5%	10	

Remarks: 1.8%

8. Distance from pen to potential surface water	Factor	
> 5280 feet	1	
4000 - 5280 feet	2	
2640 - 3999 feet	4	
1000 - 2639 feet	5	
500 - 999 feet	7	
100 - 500 feet	9	Factor= 4
< 100 feet	10	

Remarks: 3580 feet

9. Extraneous drainage	Factor	
> 1X pen area	1	
1X - 2.9X pen area	4	
3X - 4.9X pen area	7	Factor= 1
≥ 5X pen area	9	

Remarks: none

10. Annual rainfall	Factor	
< 20 inches	1	
20 - 24.9 inches	3	
25 - 29.9 inches	5	
30 - 34.9 inches	7	
35 - 39.9 inches	9	Factor= 3
≥ 40 inches	10	

Remarks: 24.9 inches per year

11. Rainfall intensity (25-year, 24-hour storm)	Factor	
< 4.5 inches	1	
4.5 - 4.9 inches	3	
5.0 - 5.4 inches	5	
5.5 - 5.9 inches	7	
6.0 - 6.4 inches	9	Factor= 3
≥ 6.5 inches	10	

Remarks: 4.8 inches

Section A-Total of Surface Water Quality Factors 42

[1/] Conservation Practice Standard 635, Vegetated Treatment Area, can be used as a grass buffer.

Figure KS2-1 Example of Form KS-ENG-17 (continued)

KS-ENG-17
Page 2

Name: Joe Feeder Legal Desc.: Section 16, T5S R15W

Section B–Groundwater Quality Assessment

1. Capacity	Factor	
< 50 AUs	1	
50 - 99 AUs	3	
100 - 299 AUs	5	
300 - 499 AUs	7	
500 - 699 AUs	8	Factor= 7
700 - 999 AUs	9	

Remarks:
350 AUs

2. Annual rainfall	Factor	
< 20 inches	1	
20 - 24.9 inches	3	
25 - 29.9 inches	5	
30 - 34.9 inches	7	
35 - 39.9 inches	9	Factor= 3
≥ 40 inches	10	

Remarks:
24.9 inches

3. Depth to groundwater	Factor	
≥ 150 feet	1	
25 -149.9 feet	3	
10 - 24.9 feet	6	
5 - 9.9 feet	8	Factor= 1
< 5 feet	10	

Remarks:
250 feet

4. Soils receiving runoff	Factor	
Clay	1	
Silty clay	3	
Silt	5	
Silty sand	7	Factor= 3
Sand	9	

Remarks:
Harney silt loam

5. Distance to nearest well (water, gas oil) potentially impacted (downgradient)	Factor	
≥ 600 feet	1	
200 - 599 feet	3	
100 - 199 feet	5	
50 - 99 feet	7	
1 - 49 feet	9	Factor= 1
0 foot	10	

Remarks:
2500 feet

Section B - Total of Groundwater Quality Factors 15

Section C–Special Conditions

1.	Does the feedlot have over 1,000 AUs, does it meet the National Pollution Discharge Elimination System (NPDES) definition, or does it have 300+ AUs and discharge through a man-made device?	☐ Yes	☑ No
2.	Does it have one or more lagoons, pits, or tanks for waste storage?	☐ Yes	☑ No
3.	Does it have a perennial, intermittent, or ephemeral stream through or adjacent to the pens?	☐ Yes	☑ No
4.	Does it have a daily discharge?	☐ Yes	☑ No
5.	Does it have springs, seeps, rock outcrops in pens or in the direct runoff area?	☐ Yes	☑ No
6.	Is it located in a sensitive groundwater area?	☐ Yes	☑ No
7.	Is the surface water "outstanding natural resource waters," "exceptional state waters," or "special aquatic life use water?"	☐ Yes	☑ No

Section D–Evaluation

Section A: If the Total of Surface Water Quality Factors is > 60, then it is a significant surface water quality concern.

Section B: If the Total of Groundwater Quality Factors is > 25, then it is a significant groundwater quality concern.

Section C:

If any of the questions in Items C1, C2, C3, or C4 are "Yes," contact the Kansas Department of Health and Environment (KDHE).

If Item C5 or C6 is "Yes" and the Section B Total of Groundwater Quality Factors is > 20, then there is a groundwater quality concern.

If Item C7 is "Yes" and the Section A-Total of the Surface Water Quality Factors is > 50, then there is a surface water quality concern.