<u>9. Calculating Load Reductions:</u> Using methods appropriate to the situations present in the watershed, calculate estimated load reductions for the management measures identified.

- Load reductions can be estimated for many agricultural and urban best management practices. For agricultural practices financed by Section 319 grant funds, IDEM's "Loading Workbook" is the required method. This may be used to calculate soil, nitrate and phosphate load reductions for: "Ag. Fields and filter strips" -filter strips, prescribed grazing, residue mgt., conservation crop rotation, conservation cover, cover & green manure, critical area planting and strip cropping practices. Under the "Gully Stabilization" heading, practices include grade stabilization structures, grassed waterways, critical area plantings in gully zones, and water & sediment control basins (WASCoB's). Using the spreadsheet under the "Feedlots" heading gives reductions for chemical oxygen demand (COD) and phosphate.
- Urban runoff loadings can also be estimated using the IDEM "Loading Workbook". Reductions by BMP's for: BOD,COD,TSS,lead, copper, zinc, TDS, total nitrate, total kjedahl nitrogen, dissolved phosphate, total phosphate and cadmium can be estimated once the site-specific information is entered. Practices appropriate for this model include: filter strips, grass swales, infiltration devices, wet detention, wetland detention, dry detention, settling basin, sand filter, water quality inlets, street sweeping, infiltration basins, infiltration trench, porous pavement, concrete grid pavement, sand filter/detention basin, water quality inlet/sand filter, oil & grit separator, and wet pond.
- Load reductions from improvements to Evansville's combined sewer system cannot be estimated at this point. Needless to say, if a particular overflow is eliminated, then that point is no longer a source of contaminant loading. See Appendix C for an idea of what contaminants would be affected by a reduction or elimination in overflows at the three representative CSO's.
- Load reduction estimates: the calculations underlying the IDEM "Loading Workbook" require farm field specific information. And, not every BMP is needed or appropriate on every farm. For the purposes of this watershed management plan, we have made generalizations about soil type, slope, cover factor and acres treated by the BMP.

- Assuming filter strips are the prevalent BMP for farm land, and assuming a landowner adoption rate of 20%- on the 81% of land that is farmland- we estimated the following load reductions for subwatersheds 23,24,25,26:

Table 16

Agricultural Fields and Filter Strips

Please fill in the gray areas below. Once you have successfully estimated the sediment and nutrient load reductions, please print two (2) copies of this worksheet. Attach both copies to the 319A or 319U cost-share form. If you have any questions, please contact Wes Stone (317/233-6299).

These may include:
Prescribed Grazing
Residue Management, Mulch Till
Conservation Crop Rotation
Conservation Cover
Cover and Green Manure
Critical Area Planting
Stripcropping, Contour
Stripcropping, Field
Filter Strips

		Example
IDEM Project Manager:	RBO	WWS
Project ARN:	00-86	95-992
Landowner Initials:	Pigeon Creek	HJK
Date practices completed:	6/15/2013	8/8/1999

Please check which BMPs apply:
- ☐ Agricultural Field Practices
- ☑ Filter Strips

RUSLE	Before Treatment	After Treatment	Example Before Treatment	Example After Treatment
Rainfall-Runoff Erosivity Factor (R)	195	195	120	120
Soil Erodibility Factor (K)	0.42	0.42	0.35	0.35
Length-Slope Factor (LS)	0.14	0.14	0.44	0.44
Cover Management Factor (C)	0.43	0.43	0.7	0.5
Support Practice Factor (P)	1	1	0.775	0.11
Predicted Avg Annual Soil Loss (ton/acre/year)	4.93	4.93	10.03	1.02

		Example
Contributing Area (acres)	8327	14

The portion of the treated field which contributes eroded soil to the waterbody. The contributing area is defined by the runoff flowpath and by topography and may differ in size from the actual treated field.

Please select a gross soil texture:

- ○ Clay (clay, clay loam, and silt clay)
- ◉ Silt (silt, silty clay loam, loam, and silt loam)
- ○ Sand (sand, sandy clay, sandy clay loam, sandy loam, and loamy sand)
- ○ Peat

Estimated Load Reductions for Agricultural Field Practices

	Treated	Example
Sediment Load Reduction (ton/year)	0	85
Phosphorus Load Reduction (lb/year)	0	100
Nitrogen Load Reduction (lb/yr)	0	200

Estimated Additional Load Reductions through Filter Strips

	Filter Strips	Example
Sediment Load Reduction (ton/year)	8133	92
Phosphorus Load Reduction (lb/year)	13837	114
Nitrogen Load Reduction (lb/yr)	25795	227

Total Estimated Load Reductions

	Total	Example
Sediment Load Reduction (ton/year)	8133	177
Phosphorus Load Reduction (lb/year)	13837	214
Nitrogen Load Reduction (lb/yr)	25795	427

- Comparing these reductions to the loadings from the Harza study for these four subwatersheds:

  Sediment load reduction through filter strips,
  8133 tons/year
  divided by
  Initial sediment loading, 15,981 tons/year
  Equals 51% reduction (goal is 50%)

- Assuming filter strips are the prevalent BMP for farm land, and assuming a landowner adoption rate of 20%- on the 15% of area that is farmland- we estimated the following sediment load reductions for subwatersheds 16,17 and 18:

Table 17

Agricultural Fields and Filter Strips

Please fill in the gray areas below. Once you have successfully estimated the sediment and nutrient load reductions, please print two (2) copies of this worksheet. Attach both copies to the 319A or 319U cost-share form. If you have any questions, please contact Wes Stone (317/233-6299).

These may include:
Prescribed Grazing
Residue Management, Mulch Till
Conservation Crop Rotation
Conservation Cover
Cover and Green Manure
Critical Area Planting
Stripcropping, Contour
Stripcropping, Field
Filter Strips

		Example
IDEM Project Manager:	RBO	WWS
Project ARN:	00-96	95-092
Landowner Initials:	S&P 16-18	HJK
Date practices completed:	6/15/2013	8/8/1999

Please check which BMPs apply:
- ☐ Agricultural Field Practices
- ☑ Filter Strips

			Example	
RUSLE	Before Treatment	After Treatment	Before Treatment	After Treatment
Rainfall-Runoff Erosivity Factor (R)	155	155	120	120
Soil Erodibility Factor (K)	0.42	0.42	0.35	0.35
Length-Slope Factor (LS)	0.14	0.14	0.44	0.44
Cover Management Factor (C)	0.49	0.49	0.7	0.5
Support Practice Factor (P)	1	1	0.775	0.11
Predicted Avg Annual Soil Loss (ton/acre/year)	4.93	4.93	10.03	1.02

		Example
Contributing Area (acres)	910	14

The portion of the treated field which contributes eroded soil to the waterbody. The contributing area is defined by the runoff flowpath and by topography and may differ in size from the actual treated field.

Please select a gross soil texture:

- ○ Clay (clay, clay loam, and silt clay)
- ◉ Silt (silt, silty clay loam, loam, and silt loam)
- ○ Sand (sand, sandy clay, sandy clay loam, sandy loam, and loamy sand)
- ○ Peat

Estimated Load Reductions for Agricultural Field Practices

	Treated	Example
Sediment Load Reduction (ton/year)	0	85
Phosphorus Load Reduction (lb/year)	0	100
Nitrogen Load Reduction (lb/yr)	0	200

Estimated Additional Load Reductions through Filter Strips

	Filter Strips	Example
Sediment Load Reduction (ton/year)	1172	92
Phosphorus Load Reduction (lb/year)	1887	114
Nitrogen Load Reduction (lb/yr)	3518	227

Total Estimated Load Reductions

	Total	Example
Sediment Load Reduction (ton/year)	1172	177
Phosphorus Load Reduction (lb/year)	1887	214
Nitrogen Load Reduction (lb/yr)	3518	427

- Comparing these reductions to the loadings from the Harza study for these three subwatersheds:

  Sediment load reduction through filter strips, 1172 tons/year
  divided by
  Initial sediment loading, 3347 tons/year
  Equals 35% reduction (goal is 50%)

- Goal must be met through higher landowner adoption rate or additional field practices. Keep in mind that these three areas contain significant areas of reclaimed and active mining

- Assuming filter strips are the prevalent BMP for farm land, and assuming a landowner adoption rate of 20%- on the 50% of area that is farmland- we estimated the following sediment reductions for subwatershed 6:

Table 18

Agricultural Fields and Filter Strips

Please fill in the gray areas below. Once you have successfully estimated the sediment and nutrient load reductions, please print two (2) copies of this worksheet. Attach both copies to the 319A or 319U cost-share form. If you have any questions, please contact Wes Stone (317/233-6299).

These may include:
Prescribed Grazing
Residue Management, Mulch Till
Conservation Crop Rotation
Conservation Cover
Cover and Green Manure
Critical Area Planting
Stripcropping, Contour
Stripcropping, Field
Filter Strips

		Example
IDEM Project Manager:	RSO	WWS
Project ARN:	00-00	95-992
Landowner Initials:	SS	HJK
Date practices completed:	6/15/2013	8/8/1999

Please check which BMPs apply:
- ☐ Agricultural Field Practices
- ☑ Filter Strips

RUSLE	Before Treatment	After Treatment	Example Before Treatment	Example After Treatment
Rainfall-Runoff Erosivity Factor (R)	185	185	120	120
Soil Erodibility Factor (K)	0.42	0.42	0.35	0.35
Length-Slope Factor (LS)	0.14	0.14	0.44	0.44
Cover Management Factor (C)	0.28	0.43	0.7	0.5
Support Practice Factor (P)	1	1	0.775	0.11
Predicted Avg Annual Soil Loss (ton/acre/year)	4.93	4.93	10.03	1.02

		Example
Contributing Area (acres)	910	14

The portion of the treated field which contributes eroded soil to the waterbody. The contributing area is defined by the runoff flowpath and by topography and may differ in size from the actual treated field.

Please select a gross soil texture:

- ○ Clay (clay, clay loam, and silt clay)
- ◉ Silt (silt, silty clay loam, loam, and silt loam)
- ○ Sand (sand, sandy clay, sandy clay loam, sandy loam, and loamy sand)
- ○ Peat

Estimated Load Reductions for Agricultural Field Practices

	Treated	Example
Sediment Load Reduction (ton/year)	0	85
Phosphorus Load Reduction (lb/year)	0	100
Nitrogen Load Reduction (lb/yr)	0	200

Estimated Additional Load Reductions through Filter Strips

	Filter Strips	Example
Sediment Load Reduction (ton/year)	1172	92
Phosphorus Load Reduction (lb/year)	1887	114
Nitrogen Load Reduction (lb/yr)	3518	227

Total Estimated Load Reductions

	Total	Example
Sediment Load Reduction (ton/year)	1172	177
Phosphorus Load Reduction (lb/year)	1887	214
Nitrogen Load Reduction (lb/yr)	3518	427

- Comparing these reductions to the loadings from the Harza study for this subwatershed:

  Sediment load reduction through filter strips,
  1172 tons/year
  divided by
  Initial sediment loading, 1559 tons/year
  Equals 75% reduction (goal is 50%)

- Assuming filter strips are the prevalent BMP for farm land, and assuming a landowner adoption rate of 20%- on the 81% of land that is farmland- we estimated the following phosphorous reductions for subwatersheds 24 and 25:

Table 19

Agricultural Fields and Filter Strips

Please fill in the gray areas below. Once you have successfully estimated the sediment and nutrient load reductions, please print two (2) copies of this worksheet. Attach both copies to the 319A or 319U cost-share form. If you have any questions, please contact Wes Stone (317/233-6299).

These may include:
Prescribed Grazing
Residue Management, Mulch Till
Conservation Crop Rotation
Conservation Cover
Cover and Green Manure
Critical Area Planting
Stripcropping, Contour
Stripcropping, Field
Filter Strips

		Example
IDEM Project Manager:	RBO	WWS
Project ARN:	00-00	95-092
Landowner Initials:	P 24, 25	HJK
Date practices completed:	6/15/2013	8/8/1999

Please check which BMPs apply:
- ☐ Agricultural Field Practices
- ☑ Filter Strips

RUSLE	Before Treatment	After Treatment	Example Before Treatment	Example After Treatment
Rainfall-Runoff Erosivity Factor (R)	195	195	120	120
Soil Erodibility Factor (K)	0.42	0.42	0.35	0.35
Length-Slope Factor (LS)	0.14	0.14	0.44	0.44
Cover Management Factor (C)	0.45	0.45	0.7	0.5
Support Practice Factor (P)	1	1	0.775	0.11
Predicted Avg Annual Soil Loss (ton/acre/year)	4.93	4.93	10.03	1.02

		Example
Contributing Area (acres)	4929	14

The portion of the treated field which contributes eroded soil to the waterbody. The contributing area is defined by the runoff flowpath and by topography and may differ in size from the actual treated field.

Please select a gross soil texture:

- ○ Clay (clay, clay loam, and silt clay)
- ◉ Silt (silt, silty clay loam, loam, and silt loam)
- ○ Sand (sand, sandy clay, sandy clay loam, sandy loam, and loamy sand)
- ○ Peat

Estimated Load Reductions for Agricultural Field Practices

	Treated	Example
Sediment Load Reduction (ton/year)	0	85
Phosphorus Load Reduction (lb/year)	0	100
Nitrogen Load Reduction (lb/yr)	0	200

Estimated Additional Load Reductions through Filter Strips

	Filter Strips	Example
Sediment Load Reduction (ton/year)	5140	92
Phosphorus Load Reduction (lb/year)	8631	114
Nitrogen Load Reduction (lb/yr)	16091	227

Total Estimated Load Reductions

	Total	Example
Sediment Load Reduction (ton/year)	5140	177
Phosphorus Load Reduction (lb/year)	8631	214
Nitrogen Load Reduction (lb/yr)	16091	427

- Comparing these reductions to the phosphorous loadings from the Harza study for these two subwatersheds:

  Phosphorous load reduction through filter strips, 3923 kg/year
  divided by
  Initial phosphorous loading, 15,854 kg/year

Equals 25% reduction (goal is 50%).

- Goal will need to be met through other practices: no-till, residue mgt., cover crops, etc.

- Assuming filter strips are the prevalent BMP for farm land, and assuming a landowner adoption rate of 20%- on the 15% of land that is farm- we estimated the following phosphorous reductions for subwatersheds 16,17 and 18:

Table 20

Agricultural Fields and Filter Strips

Please fill in the gray areas below. Once you have successfully estimated the sediment and nutrient load reductions, please print two (2) copies of this worksheet. Attach both copies to the 319A or 319U cost-share form. If you have any questions, please contact Wes Stone (317/233-6299).

These may include:
Prescribed Grazing
Residue Management, Mulch Till
Conservation Crop Rotation
Conservation Cover
Cover and Green Manure
Critical Area Planting
Stripcropping, Contour
Stripcropping, Field
Filter Strips

		Example
IDEM Project Manager:	RSO	WWS
Project ARN:	00-55	95-992
Landowner Initials:	SAP 16-18	HJK
Date practices completed:	6/13/2013	8/8/1999

Please check which BMPs apply:
☐ Agricultural Field Practices
☑ Filter Strips

RUSLE	Before Treatment	After Treatment	Example Before Treatment	Example After Treatment
Rainfall-Runoff Erosivity Factor (R)	120	120	120	120
Soil Erodibility Factor (K)	0.35	0.35	0.35	0.35
Length-Slope Factor (LS)	0.44	0.44	0.44	0.44
Cover Management Factor (C)	0.7	0.7	0.7	0.5
Support Practice Factor (P)	1	1	0.775	0.11
Predicted Avg Annual Soil Loss (ton/acre/year)	4.93	4.93	10.03	1.02

	Example
Contributing Area (acres)	910	14

The portion of the treated field which contributes eroded soil to the waterbody. The contributing area is defined by the runoff flowpath and by topography and may differ in size from the actual treated field.

Please select a gross soil texture:

- ○ Clay (clay, clay loam, and silt clay)
- ◉ Silt (silt, silty clay loam, loam, and silt loam)
- ○ Sand (sand, sandy clay, sandy clay loam, sandy loam, and loamy sand)
- ○ Peat

Estimated Load Reductions for Agricultural Field Practices

	Treated	Example
Sediment Load Reduction (ton/year)	0	85
Phosphorus Load Reduction (lb/year)	0	100
Nitrogen Load Reduction (lb/yr)	0	200

Estimated Additional Load Reductions through Filter Strips

	Filter Strips	Example
Sediment Load Reduction (ton/year)	1172	92
Phosphorus Load Reduction (lb/year)	1887	114
Nitrogen Load Reduction (lb/yr)	3518	227

Total Estimated Load Reductions

	Total	Example
Sediment Load Reduction (ton/year)	1172	177
Phosphorus Load Reduction (lb/year)	1887	214
Nitrogen Load Reduction (lb/yr)	3518	427

- Comparing these reductions to the loadings from the Harza study for these three subwatersheds:

  Phosphorous load reduction through filter strips,
  858 kg/year
  divided by
  Initial phosphorous loading, 4418 kg/year

Equals 19% reduction (goal is 50%)

- Again, goal must be met by higher adoption on farmland, additional practices and/or addressing other sources of loading, i.e. mining.

- Assuming filter strips are the prevalent BMP for farm land, and assuming a landowner adoption rate of 50%, we estimate the following reductions for stream reaches MF4,8,9 and 10 of subwatershed 34, McFadden Creek:

Table 21

Agricultural Fields and Filter Strips

Please fill in the gray areas below. Once you have successfully estimated the sediment and nutrient load reductions, please print two (2) copies of this worksheet. Attach both copies to the 319A or 319U cost-share form. If you have any questions, please contact Wes Stone (317/233-6299).

These may include:
Prescribed Grazing
Residue Management, Mulch Till
Conservation Crop Rotation
Conservation Cover
Cover and Green Manure
Critical Area Planting
Stripcropping, Contour
Stripcropping, Field
Filter Strips

		Example
IDEM Project Manager:	RBO	WWS
Project ARN:	00-86	95-992
Landowner Initials:	McFadden Cr	HJK
Date practices completed:	6/15/2013	8/8/1999

Please check which BMPs apply:
- ☐ Agricultural Field Practices
- ☑ Filter Strips

			Example	
RUSLE	Before Treatment	After Treatment	Before Treatment	After Treatment
Rainfall-Runoff Erosivity Factor (R)	210	210	120	120
Soil Erodibility Factor (K)	0.35	0.35	0.35	0.35
Length-Slope Factor (LS)	0.14	0.14	0.44	0.44
Cover Management Factor (C)	0.43	0.43	0.7	0.5
Support Practice Factor (P)	1	1	0.775	0.11
Predicted Avg Annual Soil Loss (ton/acre/year)	4.55	4.55	10.03	1.02

		Example
Contributing Area (acres)	3345	14

The portion of the treated field which contributes eroded soil to the waterbody. The contributing area is defined by the runoff flowpath and by topography and may differ in size from the actual treated field.

Please select a gross soil texture:

- ○ Clay (clay, clay loam, and silt clay)
- ◉ Silt (silt, silty clay loam, loam, and silt loam)
- ○ Sand (sand, sandy clay, sandy clay loam, sandy loam, and loamy sand)
- ○ Peat

Estimated Load Reductions for Agricultural Field Practices

	Treated	Example
Sediment Load Reduction (ton/year)	0	85
Phosphorus Load Reduction (lb/year)	0	100
Nitrogen Load Reduction (lb/yr)	0	200

Estimated Additional Load Reductions through Filter Strips

	Filter Strips	Example
Sediment Load Reduction (ton/year)	3380	92
Phosphorus Load Reduction (lb/year)	5711	114
Nitrogen Load Reduction (lb/yr)	10647	227

Total Estimated Load Reductions

	Total	Example
Sediment Load Reduction (ton/year)	3380	177
Phosphorus Load Reduction (lb/year)	5711	214
Nitrogen Load Reduction (lb/yr)	10647	427

- These reductions are significantly higher than the calculated pre-BMP loadings, indicating that the limited data for this watershed- taken one time during dry weather- is not sufficient to accurately predict soil erosion. The same problem exists for the phosphorous loadings, since phosphorous is frequently bound to soil particles. For nitrogen, however, the IDEM "Loading Workbook" produced meaningful results:

  Nitrogen load reduction, 10,647 lbs/year
  Divided by
  Pre-BMP nitrogen load, 19,890 lbs/year
  Equals 53% reduction (goal is 50%)

- Feedlots and other livestock areas: Phosphorous and chemical oxygen demand (COD)load reductions can be estimated using IDEM's "Loading Workbook". Two assumptions exist with this method: the feedlot is adjacent to a hydrologic system without any buffering; and installing the animal waste system will prevent any further pollutants from reaching the hydrological system. In situations where the feedlot cannot be shown directly impacting the stream, this method should not be used. In subwatershed 20, Smith Fork headwaters, only one livestock operation fits the assumptions of this method (see worksheet next page). That is not to say that developing manure management plans and other BMP's for the other operations will not have a positive effect on water quality, it cannot be estimated using IDEM's "Loading Workbook". It is possible that NRCS has other methods to estimate load reductions. If so, we will use them when the practice is actually being planned.

Feedlot Pollution Reduction

Please fill in the gray areas below. Once you have successfully estimated the sediment and nutrient load reductions, please print two (2) copies this worksheet. Attach both copies to the 319A or 319U cost-share form.
If you have any questions, please contact Wes Stone (317/233-6299).

Notes: An animal lot refers to an open lot or combination of open lots intended for confined feeding, breeding, raising or holding animals. It is specifically designed as a confinement area in which manure accumulates or where the concentration of animals is such that vegetation cannot be maintained. The purpose of these calculations is to represent Chemical Oxygen Demand (COD) and phosphorus (P) reductions after an animal waste system is installed. This method has two assumptions: 1) the feedlot is adjacent to a receiving hydrological system without any buffering areas; and 2) installing the animal waste system will prevent any further pollutants from the lot from reaching the hydrologic system. Feedlots that cannot show impact to the hydrologic system being protected should not be evaluated with this computation.

STEP 1

5 **Contributing Area (acres): the area contributing polluted water to the discharge point(s).**

STEP 2

Percent Paved: Percent of the contributing area that is paved

- (•) 0-24%
- ( ) 25-49%
- ( ) 50-74%
- ( ) 75-100%

STEP 3

4 **Design rainfall (inches) based on 25 year frequency - 24 hour duration event (consult your local NRCS staff)**

STEP 4

Animal Numbers	Animal Type	Design Weight*
100	Slaughter Steer	1,000
0	Young Beef	500
0	Dairy Cow	1,400
0	Young Dairy Stock	500
0	Swine	200
0	Feeder Pig	50
0	Sheep	100
0	Turkey	10
0	Chicken	4
0	Duck	4
0	Horse	1,000

*Design weight in pounds. Interpolation of values should be based on the maximum weight animals would be expected to reach.

END

Pollutant Load Reductions	
Chemical Oxygen Demand reduction (lbs)	3,082
Phosphorus reduction (lbs)	58

Table 22

Load reductions can be calculated for the swine operation in subwatershed 34, reach 8:

Feedlot Pollution Reduction

Please fill in the gray areas below. Once you have successfully estimated the sediment and nutrient load reductions, please print two (2) copies this worksheet. Attach both copies to the 319A or 319U cost-share form. If you have any questions, please contact Wes Stone (317/233-6299).

Notes: An animal lot refers to an open lot or combination of open lots intended for confined feeding, breeding, raising or holding animals. It is specifically designed as a confinement area in which manure accumulates or where the concentration of animals is such that vegetation cannot be maintained. The purpose of these calculations is to represent Chemical Oxygen Demand (COD) and phosphorus (P) reductions after an animal waste system is installed. This method has two assumptions: 1) the feedlot is adjacent to a receiving hydrological system without any buffering areas; and 2) installing the animal waste system will prevent any further pollutants from the lot from reaching the hydrologic system. Feedlots that cannot show impact to the hydrologic system being protected should not be evaluated with this computation.

STEP 1 — 3 — **Contributing Area (acres): the area contributing polluted water to the discharge point(s).**

STEP 2 — **Percent Paved: Percent of the contributing area that is paved**

- (•) 0-24%
- ( ) 25-49%
- ( ) 50-74%
- ( ) 75-100%

STEP 3 — 4 — **Design rainfall (inches) based on 25 year frequency - 24 hour duration event (consult your local NRCS staff)**

STEP 4

Animal Numbers	Animal Type	Design Weight*
0	Slaughter Steer	1,000
0	Young Beef	500
0	Dairy Cow	1,400
0	Young Dairy Stock	500
300	Swine	200
1200	Feeder Pig	50
0	Sheep	100
0	Turkey	10
0	Chicken	4
0	Duck	4
0	Horse	1,000

*Design weight in pounds. Interpolation of values should be based on the maximum weight animals would be expected to reach.

END

Pollutant Load Reductions

Chemical Oxygen Demand reduction (lbs)	3,051
Phosphorus reduction (lbs)	96

Table 23

And for the dairy operation in Reach MF9:

Feedlot Pollution Reduction

Please fill in the gray areas below. Once you have successfully estimated the sediment and nutrient load reductions, please print two (2) copies this worksheet. Attach both copies to the 319A or 319U cost-share form. If you have any questions, please contact Wes Stone (317/233-6299).

Notes: An animal lot refers to an open lot or combination of open lots intended for confined feeding, breeding, raising or holding animals. It is specifically designed as a confinement area in which manure accumulates or where the concentration of animals is such that vegetation cannot be maintained. The purpose of these calculations is to represent Chemical Oxygen Demand (COD) and phosphorus (P) reductions after an animal waste system is installed. This method has two assumptions: 1) the feedlot is adjacent to a receiving hydrological system without any buffering areas; and 2) installing the animal waste system will prevent any further pollutants from the lot from reaching the hydrologic system. Feedlots that cannot show impact to the hydrologic system being protected should not be evaluated with this computation.

STEP 1 — 1 — **Contributing Area (acres): the area contributing polluted water to the discharge point(s).**

STEP 2 — **Percent Paved: Percent of the contributing area that is paved**

- ○ 0-24%
- ○ 25-49%
- ◉ 50-74%
- ○ 75-100%

STEP 3 — 4 — **Design rainfall (inches) based on 25 year frequency - 24 hour duration event (consult your local NRCS staff)**

STEP 4

Animal Numbers	Animal Type	Design Weight*
0	Slaughter Steer	1,000
0	Young Beef	500
50	Dairy Cow	1,400
10	Young Dairy Stock	500
0	Swine	200
0	Feeder Pig	50
0	Sheep	100
0	Turkey	10
0	Chicken	4
0	Duck	4
0	Horse	1,000

*Design weight in pounds. Interpolation of values should be based on the maximum weight animals would be expected to reach.

END

Pollutant Load Reductions	
Chemical Oxygen Demand reduction (lbs)	3,289
Phosphorus reduction (lbs)	31

Table 24

The turkey operation in MF4 is contributing inadequately-treated wastewater to the stream, but that does not fit this loading model. As in the Smith Fork subwatershed, a manure management plan will be developed, but that, too cannot be quantified with this model.

- Urban erosion: IDEM's "Loading Workbook" is available to calculate load reductions from urban stormwater control. We do not have data for particular sites at the present time, but this model will be useful in the near future.