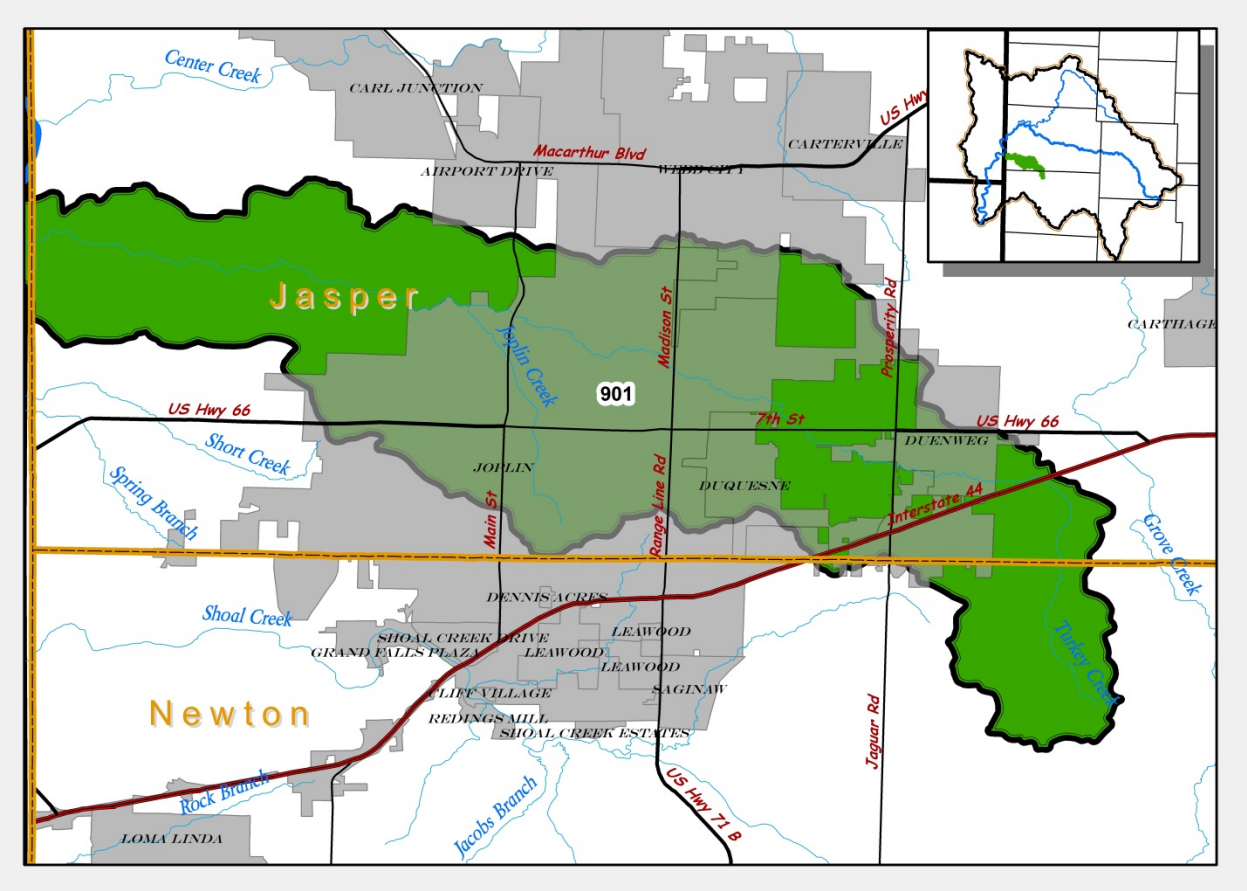

Figure 46. Turkey Creek Sub Watershed.

Table 111. SWAT Generated Land Use in the Turkey Creek Sub Watershed.

Land Use	Acres	Percentage of Land Use
Cropland	382	1%
Hay and Pasture	10,392	34%
Urban	11,865	39%
Woodland	7,949	26%
Water	111	0%
Total	30,700	100%

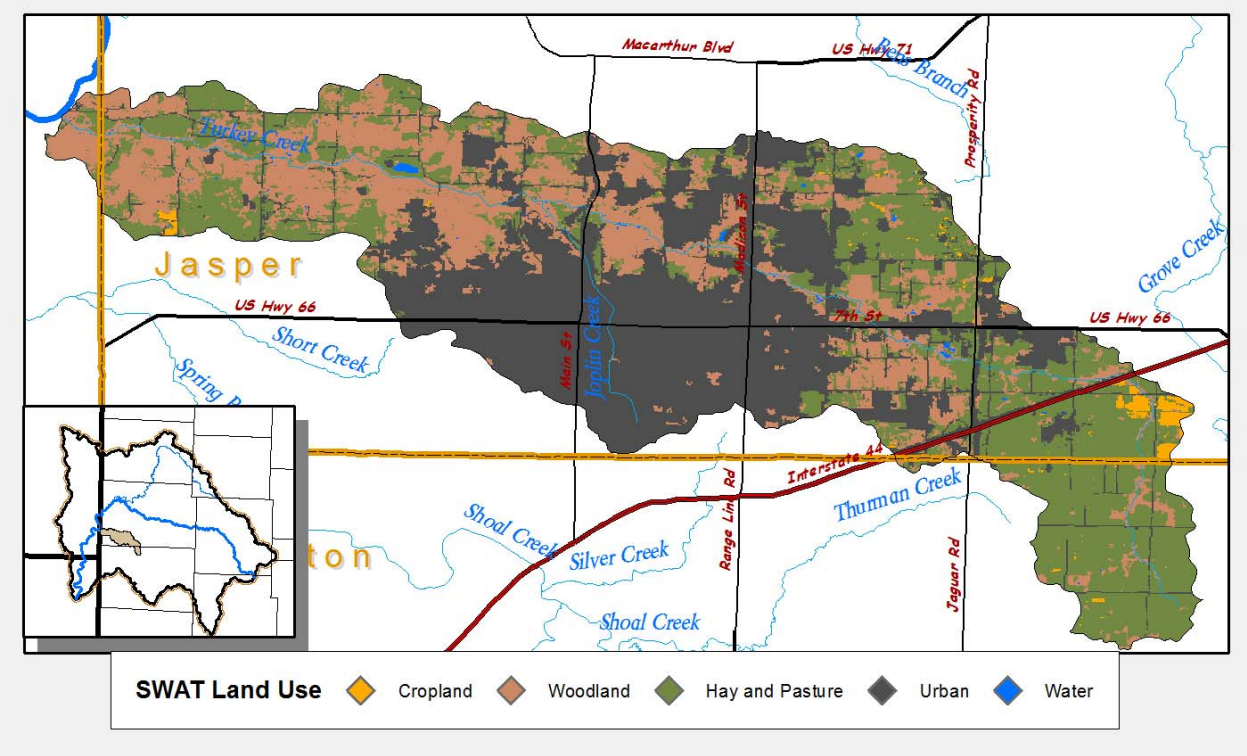

Figure 47. SWAT Generated Land Use for Turkey Creek Sub Watershed.

1) Targeted Priority Areas

There is only one HUC 12 in this sub watershed. There is no Priority 1 Targeted Area in Turkey Creek. Therefore, cropland and livestock BMPs will be placed in the Priority 2 catchment area as shown in the medium green color on the map below. Urban BMPs will be placed in any urban area of the sub watershed.

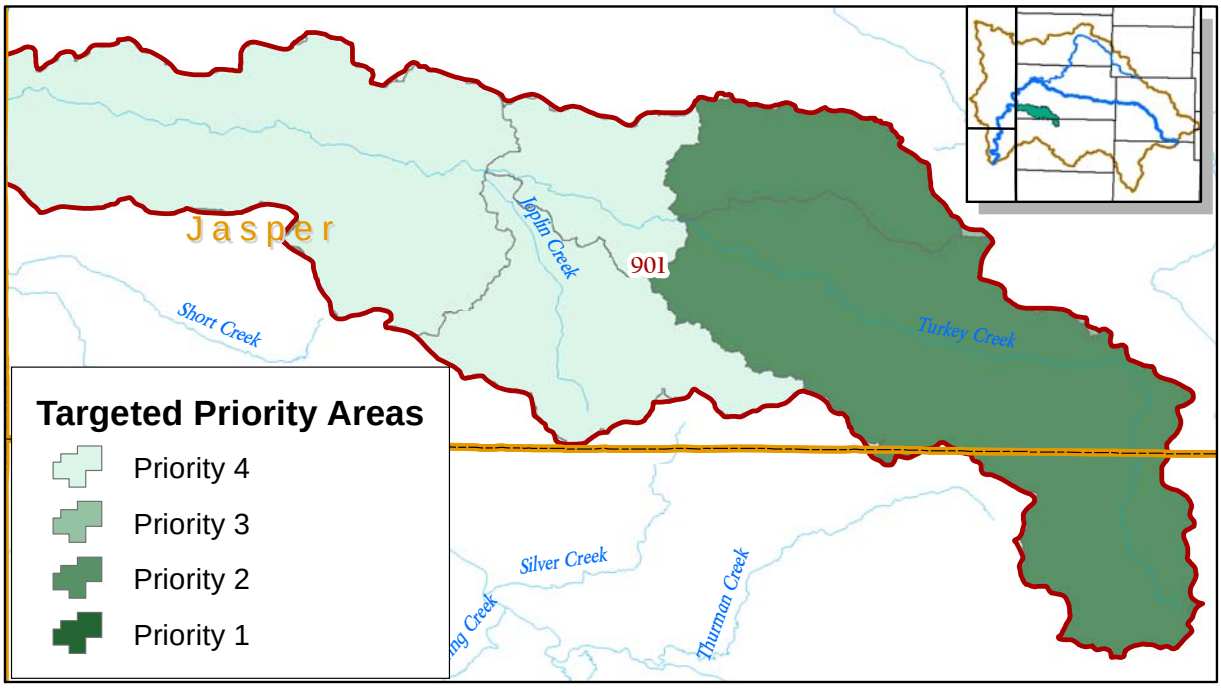

Figure 48. Targeted Priority Area Turkey Creek Sub Watershed.

2) Adoption Rates for BMPs by Pollutant Source

Table 112. Cropland BMP Adoption Rates in Turkey Creek Sub Watershed.

Sub Watershed #901 Turkey Creek Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	5	5	5	5	5	5	5	5	43
2	5	5	5	5	5	5	5	5	43
3	5	5	5	5	5	5	5	5	43
4	5	5	5	5	5	5	5	5	43
5	5	5	5	5	5	5	5	5	43
6	5	5	5	5	5	5	5	5	43
7	5	5	5	5	5	5	5	5	43
8	5	5	5	5	5	5	5	5	43
9	5	5	5	5	5	5	5	5	43
10	5	5	5	5	5	5	5	5	43
11	5	5	5	5	5	5	5	5	43
12	5	5	5	5	5	5	5	5	43
13	5	5	5	5	5	5	5	5	43
14	5	5	5	5	5	5	5	5	43
15	5	5	5	5	5	5	5	5	43

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
16	5	5	5	5	5	5	5	5	43
17	5	5	5	5	5	5	5	5	43
18	5	5	5	5	5	5	5	5	43
19	5	5	5	5	5	5	5	5	43
20	5	5	5	5	5	5	5	5	43

Table 113. Livestock BMP Adoption Rates in Turkey Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Adoption (over 20 years)
5	5	1	2	1	0	0	**14**

Table 114. Urban BMP Adoption Rates in Turkey Creek Sub Watershed.

Turkey Creek Urban BMP Adoption				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Total Adoption**
1	1			1
2		1	1	2
3	1			1
4		1	1	2
5	1			1
6		1	1	2
7	1			1
8		1	1	2
9	1			1
10		1	1	2
11	1			1
12		1	1	2
13	1			1
14		1	1	2
15	1			1
16		1	1	2
17	1			1
18		1	1	2
19	1			1
20		1	1	2

3) Pollutant Load Reductions

Table 115. Cropland Erosion Load Reduction in Turkey Creek Sub Watershed.

Sub Watershed #901 Turkey Creek Annual Soil Erosion Reduction									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	2	0	1	1	1	1	2	2	10
2	5	1	2	2	3	2	3	3	20
3	7	1	2	2	4	3	5	5	30
4	10	1	3	3	5	4	6	6	39
5	12	2	4	4	6	5	8	8	49
6	15	2	5	5	8	6	10	10	59
7	17	2	6	6	9	7	11	11	69
8	19	3	6	6	10	8	13	13	79
9	22	3	7	7	12	9	15	15	89
10	24	3	8	8	13	10	16	16	99
11	27	4	9	9	14	11	18	18	109
12	29	4	10	10	16	12	19	19	118
13	32	4	11	11	17	13	21	21	128
14	34	5	11	11	18	14	23	23	138
15	36	5	12	12	19	15	24	24	148
16	39	5	13	13	21	16	26	26	158
17	41	6	14	14	22	17	28	28	168
18	44	6	15	15	23	17	29	29	178
19	46	6	15	15	25	18	31	31	188
20	49	6	16	16	26	19	32	32	197

Table 116. Cropland Phosphorus Load Reduction in Turkey Creek Sub Watershed.

Sub Watershed #901 Turkey Creek Annual Phosphorus Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	6	2	3	3	6	4	7	7	38
2	11	4	7	7	11	8	14	14	77
3	17	6	10	10	17	13	21	21	115
4	22	8	14	14	22	17	28	28	154
5	28	10	17	17	28	21	35	35	192
6	34	13	21	21	34	25	42	42	231
7	39	15	24	24	39	29	49	49	269
8	45	17	28	28	45	34	56	56	307

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
9	50	19	31	31	50	38	63	63	346
10	56	21	35	35	56	42	70	70	384
11	61	23	38	38	61	46	77	77	423
12	67	25	42	42	67	50	84	84	461
13	73	27	45	45	73	54	91	91	499
14	78	29	49	49	78	59	98	98	538
15	84	31	52	52	84	63	105	105	576
16	89	34	56	56	89	67	112	112	615
17	95	36	59	59	95	71	119	119	653
18	101	38	63	63	101	75	126	126	692
19	106	40	66	66	106	80	133	133	730
20	112	42	70	70	112	84	140	140	768

Table 117. Cropland Nitrogen Load Reduction in Turkey Creek Sub Watershed.

Sub Watershed #901 Turkey Creek Annual Nitrogen Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	13	8	13	13	21	16	13	27	126
2	27	16	27	27	43	32	27	54	252
3	40	24	40	40	64	48	40	80	378
4	54	32	54	54	86	64	54	107	504
5	67	40	67	67	107	80	67	134	630
6	80	48	80	80	129	96	80	161	755
7	94	56	94	94	150	113	94	188	881
8	107	64	107	107	171	129	107	214	1,007
9	121	72	121	121	193	145	121	241	1,133
10	134	80	134	134	214	161	134	268	1,259
11	147	88	147	147	236	177	147	295	1,385
12	161	96	161	161	257	193	161	321	1,511
13	174	104	174	174	279	209	174	348	1,637
14	188	113	188	188	300	225	188	375	1,763
15	201	121	201	201	321	241	201	402	1,889
16	214	129	214	214	343	257	214	429	2,015
17	228	137	228	228	364	273	228	455	2,141
18	241	145	241	241	386	289	241	482	2,266
19	255	153	255	255	407	305	255	509	2,392
20	268	161	268	268	429	321	268	536	2,518

Table 118. Livestock Phosphorus Load Reduction in Turkey Creek Sub Watershed.

Phosphorus Load Reduction in Pounds (after all livestock BMPs are installed)							
Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
525	2,375	475	760	888	0	0	**5,023**

Table 119. Livestock Nitrogen Load Reduction in Turkey Creek Sub Watershed.

Nitrogen Load Reduction in Pounds (after all livestock BMPs are installed)							
Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
989	4,473	895	1,431	1,673	0	0	**9,461**

Table 120. Urban Erosion Load Reduction in the Turkey Creek Sub Watershed.

Turkey Creek Urban BMP Sediment Reduction Rates (tons)				
Year	Bioswale	Stream Buffers	Permanent Vegetation	Cumulative Load Reduction
1	1.03	0.00	0.00	1.03
2	1.03	1.54	0.10	2.67
3	2.05	1.54	0.10	3.69
4	2.05	3.08	0.21	5.33
5	3.08	3.08	0.21	6.36
6	3.08	4.61	0.31	8.00
7	4.10	4.61	0.31	9.02
8	4.10	6.15	0.41	10.66
9	5.13	6.15	0.41	11.69
10	5.13	7.69	0.51	13.33
11	6.15	7.69	0.51	14.35
12	6.15	9.23	0.62	15.99
13	7.18	9.23	0.62	17.02
14	7.18	10.76	0.72	18.66
15	8.20	10.76	0.72	19.68
16	8.20	12.30	0.82	21.32
17	9.23	12.30	0.82	22.35
18	9.23	13.84	0.92	23.99
19	10.25	13.84	0.92	25.01
20	10.25	15.38	1.03	26.65

Table 121. Urban Phosphorus Load Reduction in the Turkey Creek Sub Watershed.

Turkey Creek Urban BMP Phosphorus Reduction Rates (pounds)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	7.5	0	0	8
2	7.5	11.25	1.425	20
3	15	11.25	1.425	28
4	15	22.5	2.85	40
5	22.5	22.5	2.85	48
6	22.5	33.75	4.275	61
7	30	33.75	4.275	68
8	30	45	5.7	81
9	37.5	45	5.7	88
10	37.5	56.25	7.125	101
11	45	56.25	7.125	108
12	45	67.5	8.55	121
13	52.5	67.5	8.55	129
14	52.5	78.75	9.975	141
15	60	78.75	9.975	149
16	60	90	11.4	161
17	67.5	90	11.4	169
18	67.5	101.25	12.825	182
19	75	101.25	12.825	189
20	75	112.5	14.25	202

Table 122. Urban Nitrogen Load Reduction in the Turkey Creek Sub Watershed.

Turkey Creek Urban BMP Nitrogen Reduction Rates (pounds)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	58.5	0	0	59
2	58.5	87.75	11.115	157
3	117	87.75	11.115	216
4	117	175.5	22.23	315
5	175.5	175.5	22.23	373
6	175.5	263.25	33.345	472
7	234	263.25	33.345	531
8	234	351	44.46	629
9	292.5	351	44.46	688
10	292.5	438.75	55.575	787
11	351	438.75	55.575	845
12	351	526.5	66.69	944
13	409.5	526.5	66.69	1,003
14	409.5	614.25	77.805	1,102

Year	Bioswale	Stream Buffers	Permanent Vegetation	Cumulative Load Reduction
15	468	614.25	77.805	1,160
16	468	702	88.92	1,259
17	526.5	702	88.92	1,317
18	526.5	789.75	100.035	1,416
19	585	789.75	100.035	1,475
20	585	877.5	111.15	1,574

4) Costs of Implementing BMPs

Table 123. Cropland BMP Costs in the Turkey Creek Sub Watershed.

Sub Watershed #901 Turkey Creek Total Annual Cost of Cropland BMPs, 3% Inflation									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	$421	$211	$423	$211	$867	$678	$361	$678	$3,851
2	$434	$218	$436	$218	$894	$698	$372	$698	$3,967
3	$447	$224	$449	$224	$920	$719	$383	$719	$4,086
4	$460	$231	$462	$231	$948	$741	$395	$741	$4,208
5	$474	$238	$476	$238	$976	$763	$407	$763	$4,335
6	$488	$245	$490	$245	$1,006	$786	$419	$786	$4,465
7	$503	$252	$505	$252	$1,036	$809	$432	$809	$4,599
8	$518	$260	$520	$260	$1,067	$834	$445	$834	$4,737
9	$534	$268	$536	$268	$1,099	$859	$458	$859	$4,879
10	$550	$276	$552	$276	$1,132	$884	$472	$884	$5,025
11	$566	$284	$568	$284	$1,166	$911	$486	$911	$5,176
12	$583	$293	$585	$293	$1,201	$938	$500	$938	$5,331
13	$601	$301	$603	$301	$1,237	$966	$515	$966	$5,491
14	$619	$311	$621	$311	$1,274	$995	$531	$995	$5,656
15	$637	$320	$640	$320	$1,312	$1,025	$547	$1,025	$5,826
16	$656	$329	$659	$329	$1,352	$1,056	$563	$1,056	$6,000
17	$676	$339	$679	$339	$1,392	$1,088	$580	$1,088	$6,180
18	$696	$349	$699	$349	$1,434	$1,120	$597	$1,120	$6,366
19	$717	$360	$720	$360	$1,477	$1,154	$615	$1,154	$6,557
20	$739	$371	$742	$371	$1,521	$1,188	$634	$1,188	$6,753

Table 124. Livestock BMP Costs in the Turkey Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Cost (over 20 years)
$20,000	$35,000	$3,000	$4,000	$12,000	$0	$0	**$74,000**

Table 125. Urban BMP Costs in the Turkey Creek Sub Watershed.

Turkey Creek Urban BMP Implementation Cost				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cost**
1	$21,780	$0	$0	$21,780
2	$0	$1,000	$150	$1,150
3	$21,780	$0	$0	$21,780
4	$0	$1,000	$150	$1,150
5	$21,780	$0	$0	$21,780
6	$0	$1,000	$150	$1,150
7	$21,780	$0	$0	$21,780
8	$0	$1,000	$150	$1,150
9	$21,780	$0	$0	$21,780
10	$0	$1,000	$150	$1,150
11	$21,780	$0	$0	$21,780
12	$0	$1,000	$150	$1,150
13	$21,780	$0	$0	$21,780
14	$0	$1,000	$150	$1,150
15	$21,780	$0	$0	$21,780
16	$0	$1,000	$150	$1,150
17	$21,780	$0	$0	$21,780
18	$0	$1,000	$150	$1,150
19	$21,780	$0	$0	$21,780
20	$0	$1,000	$150	$1,150

5) Totals by Category

Table 126. Turkey Creek Sub Watershed Total Phosphorus Load Reduction by Category.

Turkey Creek Total Phosphorus Reduction over the 20 Year Life of the Plan		
Best Management Practice Category	Total Phosphorus Reduction, pounds	% of Total Reduction
Cropland	768	13%
Livestock	5,023	84%
Urban	202	3
Total	**5,993**	**100%**

Table 127. Turkey Creek Sub Watershed Total Cost by Category.

Turkey Creek Total Cost over the 20 Year Life of the Plan		
Best Management Practice Category	Total Cost	% of Total Cost
Cropland	$103,488	25%
Livestock	$74,000	18%
Urban	$229,300	57%
Total	**$406,788**	**100.0%**

G Shoal, Pogue and Joyce Creeks Sub Watersheds

The Shoal, Pogue and Joyce Creeks Sub Watersheds have an impairment for bacteria. Therefore, it will be targeted for livestock BMPs to address the needed bacteria TMDL. Cropland BMPs will also be addressed. Urban BMPs will apply to this watershed to be implemented in any urban area, but with special consideration to Joplin (population 45,504) and Neosho (population 10,505).

Since phosphorus is tied to manure, it has been calculated that the phosphorus load reduction for control of bacteria in this sub watershed is 21,082 pounds of phosphorus over the 20 year life of the plan. If all livestock BMPs are implemented in this watershed, 1,112 pounds of phosphorus will be reduced annually. In addition to the phosphorus reduction that is connected to bacteria contribution, phosphorus from cropland BMPs and urban BMPs will contribute 704 pounds. **This load reduction will be attained if all BMPs are implemented in the watershed.**

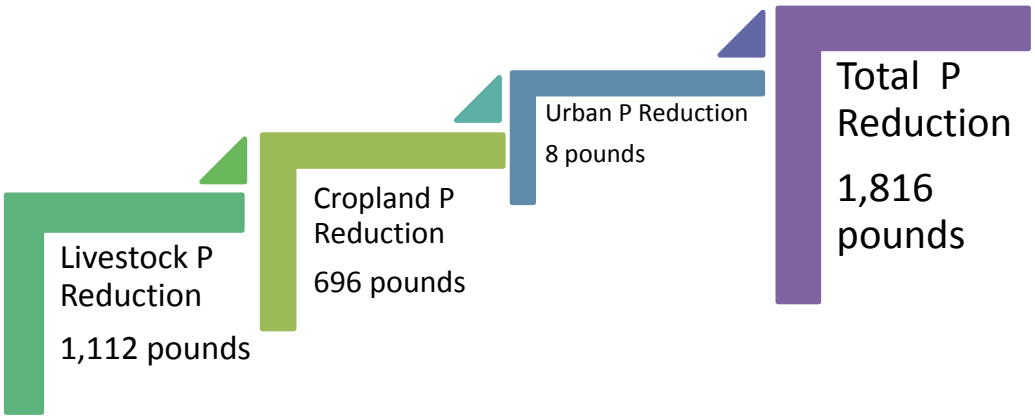

Figure 49. Annual Phosphorus Reduction by Category in Shoal, Pogue and Joyce Creeks Sub Watershed after All BMPs have been Implemented.

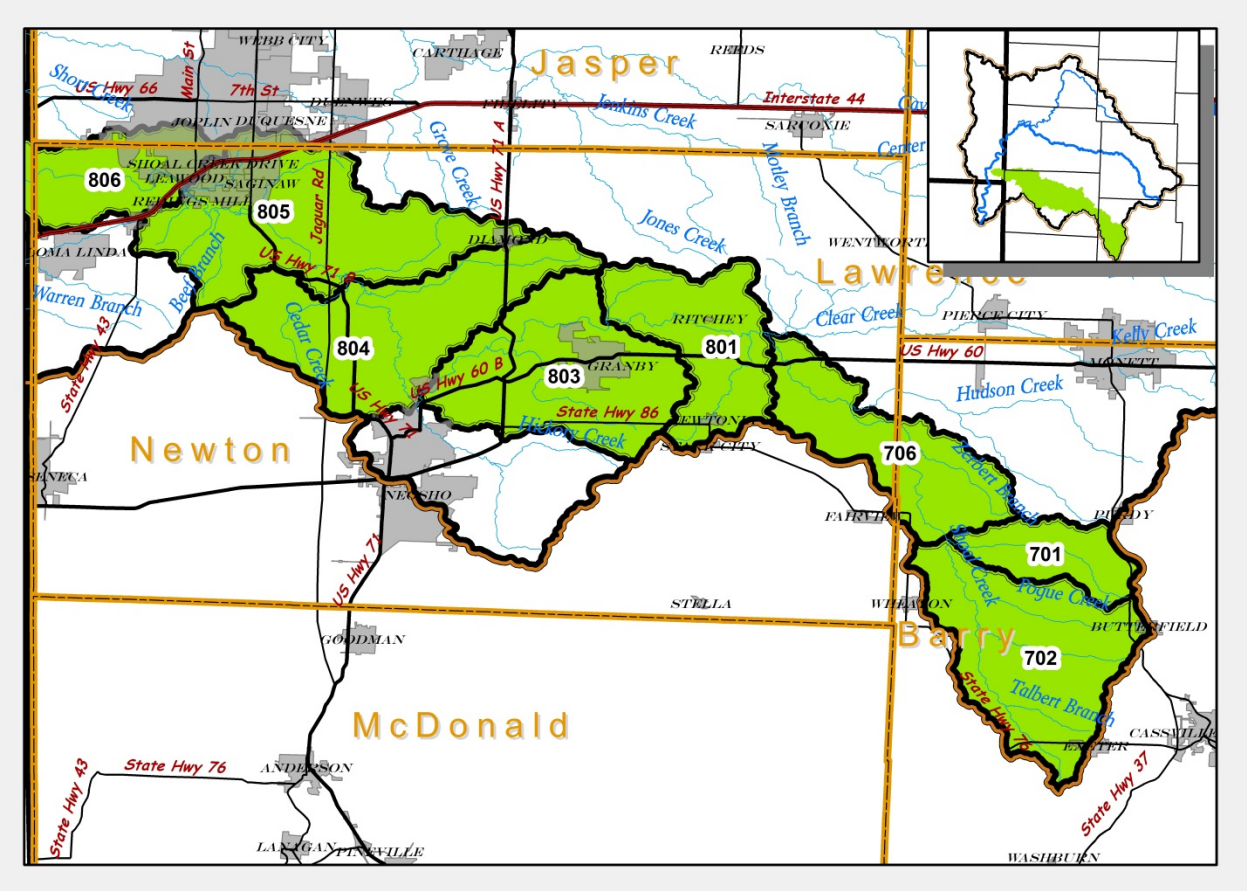

Figure 50. Shoal, Pogue and Joyce Creeks Sub Watershed.

Table 128. SWAT Generated Land use in the Shoal, Pogue and Joyce Creeks Sub Watershed.

Land Use	Acres	Percentage of Land Use
Cropland	7,017	4%
Hay and Pasture	100,959	51%
Urban	15,800	8%
Woodland	74,984	38%
Water	584	0%
Total	199,346	100%

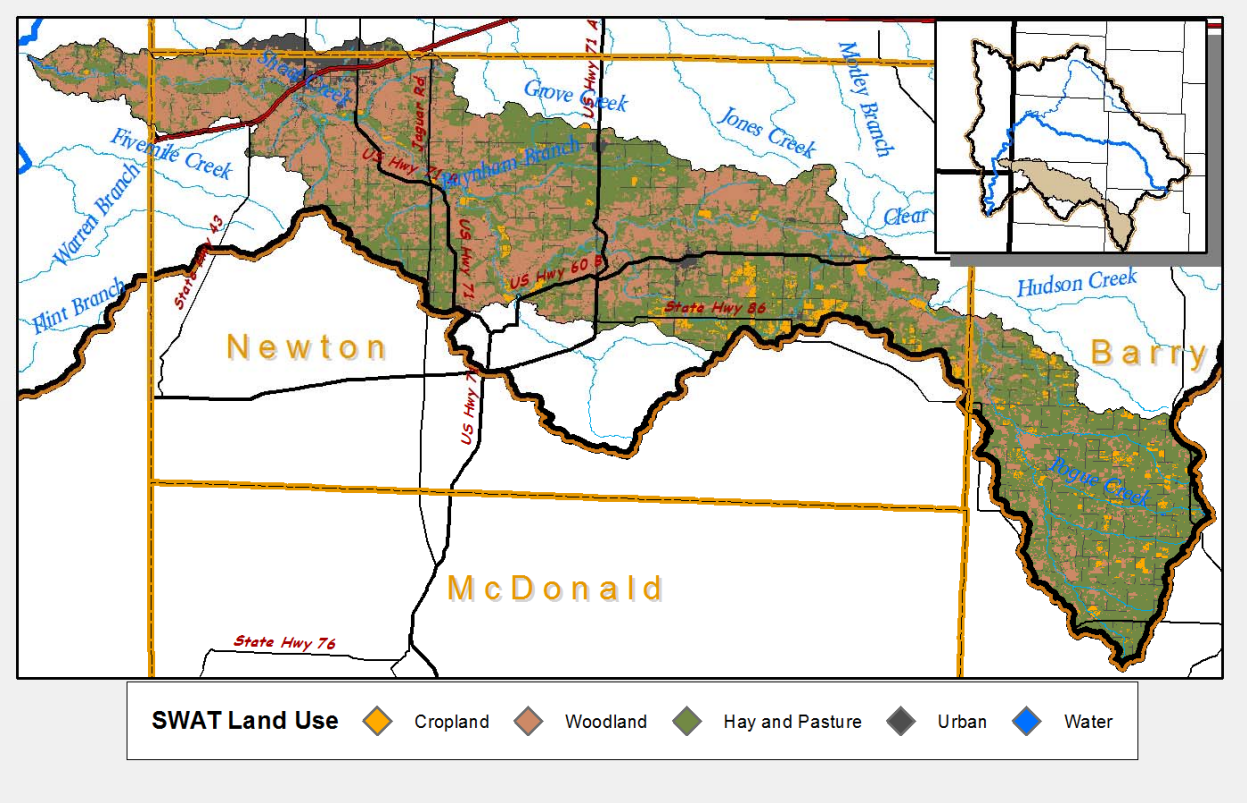

Figure 51. SWAT Generated Land Use for Shoal, Pogue and Joyce Creeks Sub Watershed.

1) Targeted Priority Areas

The SWAT determined priority catchment areas in the Shoal, Pogue and Joyce Creeks Sub Watershed is located in HUC 12 numbers 701, 702 and 706 as shown in the dark green color on the map below. This Priority 1 catchment area will be the top priority for BMP placement for cropland and livestock BMPs. Urban BMPs will be placed in any urban area of the sub watershed.

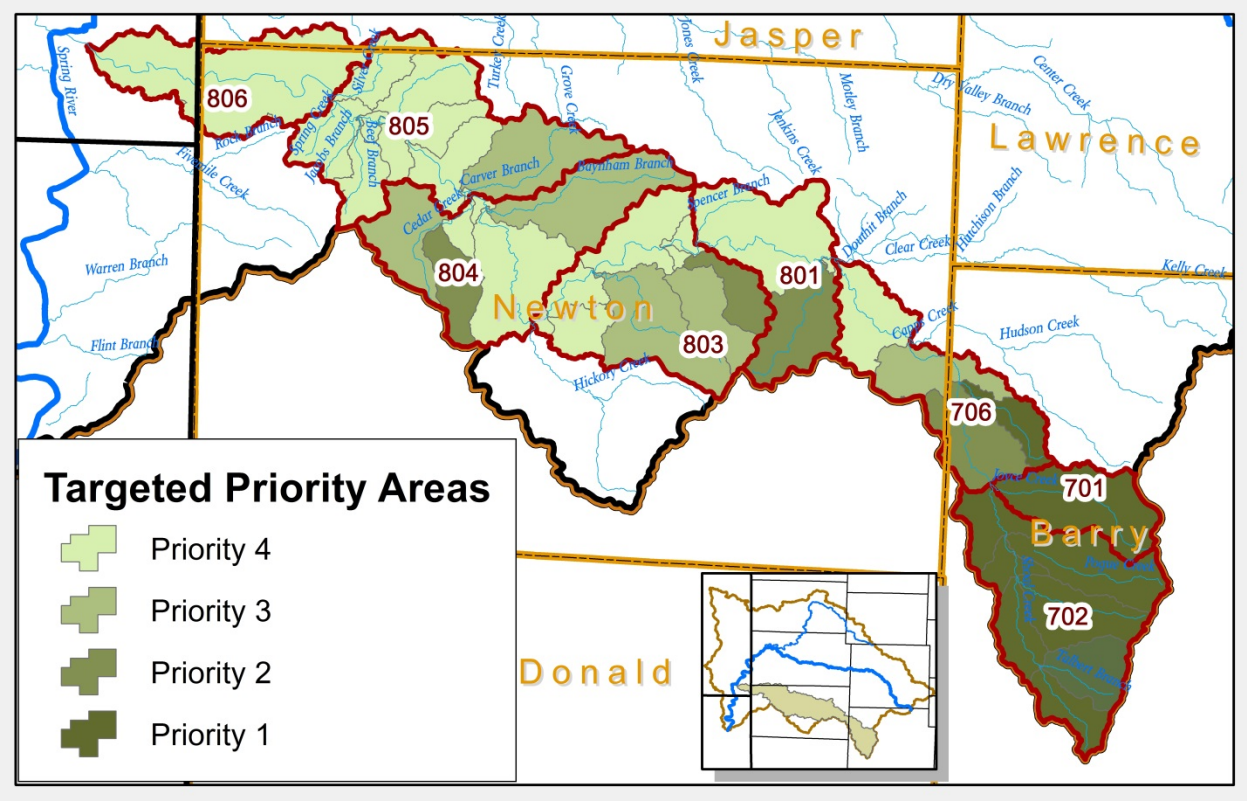

Figure 52. Targeted Priority Areas in Shoal, Pogue and Joyce Creeks Sub Watershed.

2) Adoption Rates for BMPs by Pollutant Source

Table 129. Cropland BMP Adoption Rates in Shoal, Pogue and Joyce Creek Sub Watersheds. *

Sub Watershed #806 Shoal, Pogue, and Joyce Creeks Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	61	61	61	61	61	61	61	61	491
2	61	61	61	61	61	61	61	61	491
3	61	61	61	61	61	61	61	61	491
4	61	61	61	61	61	61	61	61	491
5	61	61	61	61	61	61	61	61	491
6	61	61	61	61	61	61	61	61	491
7	61	61	61	61	61	61	61	61	491
8	61	61	61	61	61	61	61	61	491
9	61	61	61	61	61	61	61	61	491
10	61	61	61	61	61	61	61	61	491
11	61	61	61	61	61	61	61	61	491
12	61	61	61	61	61	61	61	61	491
13	61	61	61	61	61	61	61	61	491

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
14	61	61	61	61	61	61	61	61	491
15	61	61	61	61	61	61	61	61	491
16	61	61	61	61	61	61	61	61	491
17	61	61	61	61	61	61	61	61	491
18	61	61	61	61	61	61	61	61	491
19	61	61	61	61	61	61	61	61	491
20	61	61	61	61	61	61	61	61	491

***Adoption rates by HUC 12 are provided in the Appendix.**

Table 130. Livestock BMP Adoption Rates in the Shoal, Pogue and Joyce Creeks Sub Watersheds.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Adoption (over 20 years)
15	15	10	10	3	8	3	**64**

Table 131. Urban BMP Adoption Rates in the Shoal, Pogue and Joyce Creeks Sub Watersheds.

Shoal, Pogue, Joyce Creek Urban BMP Adoption				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Total Adoption**
1	1			1
2		1		1
3			1	1
4				0
5				0
6	1			1
7		1		1
8			1	1
9				0
10				0
11	1			1
12				0
13		1		1
14			1	1
15				0
16	1			1
17		1		1
18			1	1
19				0

Year	Bioswale	Stream Buffers	Permanent Vegetation	Total Adoption
20				0

3) Pollutant Load Reductions

Table 132. Cropland Erosion Load Reduction in Shoal, Pogue and Joyce Creeks Sub Watershed. *

Sub Watershed #803 Shoal, Pogue, and Joyce Creeks Annual Soil Erosion Reduction									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	14	2	5	5	7	6	9	9	56
2	28	4	9	9	15	11	18	18	112
3	41	6	14	14	22	17	28	28	168
4	55	7	18	18	29	22	37	37	224
5	69	9	23	23	37	28	46	46	280
6	83	11	28	28	44	33	55	55	336
7	96	13	32	32	51	39	64	64	391
8	110	15	37	37	59	44	73	73	447
9	124	17	41	41	66	50	83	83	503
10	138	18	46	46	73	55	92	92	559
11	151	20	50	50	81	61	101	101	615
12	165	22	55	55	88	66	110	110	671
13	179	24	60	60	95	72	119	119	727
14	193	26	64	64	103	77	128	128	783
15	206	28	69	69	110	83	138	138	839
16	220	29	73	73	117	88	147	147	895
17	234	31	78	78	125	94	156	156	951
18	248	33	83	83	132	99	165	165	1,007
19	261	35	87	87	139	105	174	174	1,063
20	275	37	92	92	147	110	183	183	1,119

***Erosion load reduction rates by HUC 12 are provided in the Appendix.**

Table 133. Cropland Phosphorus load Reduction in Shoal, Pogue and Joyce Creeks Sub Watershed. *

Sub Watershed #803 Shoal, Pogue, and Joyce Creeks Annual Phosphorus Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	53	20	33	33	53	40	67	67	368
2	107	40	67	67	107	80	134	134	735
3	160	60	100	100	160	120	201	201	1,103
4	214	80	134	134	214	160	267	267	1,471

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
5	267	100	167	167	267	201	334	334	1,839
6	321	120	201	201	321	241	401	401	2,206
7	374	140	234	234	374	281	468	468	2,574
8	428	160	267	267	428	321	535	535	2,942
9	481	181	301	301	481	361	602	602	3,309
10	535	201	334	334	535	401	669	669	3,677
11	588	221	368	368	588	441	735	735	4,045
12	642	241	401	401	642	481	802	802	4,412
13	695	261	435	435	695	521	869	869	4,780
14	749	281	468	468	749	562	936	936	5,148
15	802	301	501	501	802	602	1,003	1,003	5,516
16	856	321	535	535	856	642	1,070	1,070	5,883
17	909	341	568	568	909	682	1,137	1,137	6,251
18	963	361	602	602	963	722	1,203	1,203	6,619
19	1,016	381	635	635	1,016	762	1,270	1,270	6,986
20	1,070	401	669	669	1,070	802	1,337	1,337	7,354

***Phosphorus load reduction rates by HUC 12 are provided in the Appendix.**

Table 134. Cropland Nitrogen Load Reduction in Shoal, Pogue and Joyce Creeks Sub Watershed. *

Sub Watershed #803 Shoal, Pogue, and Joyce Creek Annual Nitrogen Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	91	55	91	91	145	109	91	182	854
2	182	109	182	182	291	218	182	364	1,709
3	273	164	273	273	436	327	273	545	2,563
4	364	218	364	364	582	436	364	727	3,418
5	454	273	454	454	727	545	454	909	4,272
6	545	327	545	545	873	654	545	1,091	5,126
7	636	382	636	636	1,018	763	636	1,272	5,981
8	727	436	727	727	1,163	873	727	1,454	6,835
9	818	491	818	818	1,309	982	818	1,636	7,690
10	909	545	909	909	1,454	1,091	909	1,818	8,544
11	1,000	600	1,000	1,000	1,600	1,200	1,000	2,000	9,398
12	1,091	654	1,091	1,091	1,745	1,309	1,091	2,181	10,253
13	1,182	709	1,182	1,182	1,891	1,418	1,182	2,363	11,107
14	1,272	763	1,272	1,272	2,036	1,527	1,272	2,545	11,961
15	1,363	818	1,363	1,363	2,181	1,636	1,363	2,727	12,816

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
16	1,454	873	1,454	1,454	2,327	1,745	1,454	2,909	13,670
17	1,545	927	1,545	1,545	2,472	1,854	1,545	3,090	14,525
18	1,636	982	1,636	1,636	2,618	1,963	1,636	3,272	15,379
19	1,727	1,036	1,727	1,727	2,763	2,072	1,727	3,454	16,233
20	1,818	1,091	1,818	1,818	2,909	2,181	1,818	3,636	17,088

***Nitrogen load reduction rates by HUC 12 are provided in the Appendix.**

Table 135. Livestock Phosphorus Load Reductions in Shoal, Pogue and Joyce Creeks Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
1,575	7,125	4,750	3,800	2,665	988	1,332	**22,235**

Table 136. Livestock Nitrogen Load Reductions in Shoal, Pogue and Joyce Creeks Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
2,966	13,420	8,947	7,157	5,019	1,861	2,510	**41,880**

Table 137. Urban Erosion Load Reduction in the Shoal, Pogue and Joyce Creeks Sub Watershed.

Shoal, Pogue, Joyce Creek Urban BMP Sediment Reduction Rates (tons)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	1.03	0.00	0.00	1.03
2	1.03	1.54	0.00	2.56
3	1.03	1.54	0.10	2.67
4	1.03	1.54	0.10	2.67
5	1.03	1.54	0.10	2.67
6	2.05	1.54	0.10	3.69
7	2.05	3.08	0.10	5.23
8	2.05	3.08	0.21	5.33
9	2.05	3.08	0.21	5.33
10	2.05	3.08	0.21	5.33
11	3.08	3.08	0.21	6.36
12	3.08	3.08	0.21	6.36
13	3.08	4.61	0.21	7.89
14	3.08	4.61	0.31	8.00
15	3.08	4.61	0.31	8.00

Year	Bioswale	Stream Buffers	Permanent Vegetation	Cumulative Load Reduction
16	4.10	4.61	0.31	9.02
17	4.10	6.15	0.31	10.56
18	4.10	6.15	0.41	10.66
19	4.10	6.15	0.41	10.66
20	4.10	6.15	0.41	10.66

Table 138. Urban Phosphorus Load Reduction in the Shoal, Pogue and Joyce Creeks Sub Watershed.

Shoal, Pogue, Joyce Creek Urban BMP Phosphorus Reduction Rates (pounds)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	7.5	0	0	8
2	7.5	11.25	0	19
3	7.5	11.25	1.425	20
4	7.5	11.25	1.425	20
5	7.5	11.25	1.425	20
6	15	11.25	1.425	28
7	15	22.5	1.425	39
8	15	22.5	2.85	40
9	15	22.5	2.85	40
10	15	22.5	2.85	40
11	22.5	22.5	2.85	48
12	22.5	22.5	2.85	48
13	22.5	33.75	2.85	59
14	22.5	33.75	4.275	61
15	22.5	33.75	4.275	61
16	30	33.75	4.275	68
17	30	45	4.275	79
18	30	45	5.7	81
19	30	45	5.7	81
20	30	45	5.7	81

Table 139. Urban Nitrogen Load Reduction in the Shoal, Pogue and Joyce Creeks Sub Watershed.

Shoal, Pogue, Joyce Creek Urban BMP Nitrogen Reduction Rates (pounds)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	58.5	0	0	59
2	58.5	87.75	0	146
3	58.5	87.75	11.115	157
4	58.5	87.75	11.115	157
5	58.5	87.75	11.115	157
6	117	87.75	11.115	216
7	117	175.5	11.115	304

Year	Bioswale	Stream Buffers	Permanent Vegetation	Cumulative Load Reduction
8	117	175.5	22.23	315
9	117	175.5	22.23	315
10	117	175.5	22.23	315
11	175.5	175.5	22.23	373
12	175.5	175.5	22.23	373
13	175.5	263.25	22.23	461
14	175.5	263.25	33.345	472
15	175.5	263.25	33.345	472
16	234	263.25	33.345	531
17	234	351	33.345	618
18	234	351	44.46	629
19	234	351	44.46	629
20	234	351	44.46	629

4) Costs of Implementing BMPs

Table 140. Cropland Costs of Implementing BMPs in the Shoal, Pogue and Joyce Creeks Sub Watershed. *

Shoal, Pogue, and Joyce Creek Total Annual Cost of Cropland BMPs, 3% Inflation									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	$8,488	$4,261	$8,522	$4,261	$17,480	$13,656	$7,283	$13,656	$77,607
2	$8,742	$4,389	$8,777	$4,389	$18,005	$14,066	$7,502	$14,066	$79,935
3	$9,005	$4,520	$9,041	$4,520	$18,545	$14,488	$7,727	$14,488	$82,333
4	$9,275	$4,656	$9,312	$4,656	$19,101	$14,923	$7,959	$14,923	$84,803
5	$9,553	$4,796	$9,591	$4,796	$19,674	$15,370	$8,198	$15,370	$87,347
6	$9,840	$4,939	$9,879	$4,939	$20,264	$15,831	$8,443	$15,831	$89,968
7	$10,135	$5,088	$10,175	$5,088	$20,872	$16,306	$8,697	$16,306	$92,667
8	$10,439	$5,240	$10,480	$5,240	$21,498	$16,796	$8,958	$16,796	$95,447
9	$10,752	$5,397	$10,795	$5,397	$22,143	$17,299	$9,226	$17,299	$98,310
10	$11,074	$5,559	$11,119	$5,559	$22,808	$17,818	$9,503	$17,818	$101,259
11	$11,407	$5,726	$11,452	$5,726	$23,492	$18,353	$9,788	$18,353	$104,297
12	$11,749	$5,898	$11,796	$5,898	$24,197	$18,904	$10,082	$18,904	$107,426
13	$12,101	$6,075	$12,150	$6,075	$24,922	$19,471	$10,384	$19,471	$110,649
14	$12,464	$6,257	$12,514	$6,257	$25,670	$20,055	$10,696	$20,055	$113,968
15	$12,838	$6,445	$12,890	$6,445	$26,440	$20,656	$11,017	$20,656	$117,387
16	$13,224	$6,638	$13,276	$6,638	$27,233	$21,276	$11,347	$21,276	$120,909
17	$13,620	$6,837	$13,675	$6,837	$28,050	$21,914	$11,688	$21,914	$124,536
18	$14,029	$7,042	$14,085	$7,042	$28,892	$22,572	$12,038	$22,572	$128,272

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
19	$14,450	$7,254	$14,507	$7,254	$29,759	$23,249	$12,399	$23,249	$132,121
20	$14,883	$7,471	$14,943	$7,471	$30,651	$23,946	$12,771	$23,946	$136,084

***Costs by HUC 12 are provided in the Appendix.**

Table 141. Livestock Costs of Implementing BMPs in the Shoal, Pogue and Joyce Creeks Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Cost (over 20 years)
$60,000	$105,000	$30,000	$20,000	$36,000	$60,000	$3,000	**$314,000**

Table 142. Urban Costs of Implementing BMPs in the Shoal, Pogue and Joyce Creeks Sub Watershed.

Shoal, Pogue, Joyce Creek Urban BMP Implementation Cost				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cost**
1	$21,780	$0	$0	$21,780
2	$0	$1,000	$0	$1,000
3	$0	$0	$150	$150
4	$0	$0	$0	$0
5	$0	$0	$0	$0
6	$21,780	$0	$0	$21,780
7	$0	$1,000	$0	$1,000
8	$0	$0	$150	$150
9	$0	$0	$0	$0
10	$0	$0	$0	$0
11	$21,780	$0	$0	$21,780
12	$0	$0	$0	$0
13	$0	$1,000	$0	$1,000
14	$0	$0	$150	$150
15	$0	$0	$0	$0
16	$21,780	$0	$0	$21,780
17	$0	$1,000	$0	$1,000
18	$0	$0	$150	$150
19	$0	$0	$0	$0
20	$0	$0	$0	$0

5) Totals by Category

Table 143. Shoal, Pogue and Joyce Creeks Sub Watershed Total Phosphorus Load Reduction by Category.

Shoal, Pogue and Joyce Creeks Total Phosphorus Reduction over the 20 Year Life of the Plan		
Best Management Practice Category	Total Phosphorus Reduction, pounds	% of Total Reduction
Cropland	13,918	38.4%
Livestock	22,235	61.4%
Urban	81	0.2
Total	**36,234**	**100.0%**

Table 144. Shoal, Pogue and Joyce Creeks Sub Watershed Total Cost by Category.

Shoal, Pogue and Joyce Creeks Total Cost over the 20 Year Life of the Plan		
Best Management Practice Category	Total Cost	% of Total Cost
Cropland	$2,085,327	83.7%
Livestock	$314,000	12.7%
Urban	$91,720	3.6%
Total	**$2,491,047**	**100.0%**

H Clear Creek Sub Watershed

The Clear Creek Sub Watersheds have an impairment for bacteria. Therefore, it will be targeted for livestock BMPs. Cropland BMPs will also be addressed. Urban BMPs will apply to this watershed to be implemented in any urban area, but with special consideration to Monett (population 7,396).

Since phosphorus is tied to manure, it has been calculated that the phosphorus load reduction for control of bacteria in this sub watershed is 15,807 pounds of phosphorus over the 20 year life of the plan. If all livestock BMPs are implemented in this watershed, 810 pounds of phosphorus will be reduced annually. In addition to the phosphorus reduction that is connected to bacteria contribution, phosphorus from cropland BMPs and urban BMPs will contribute 151 pounds. **This load reduction will be attained if all BMPs are implemented in the watershed.**

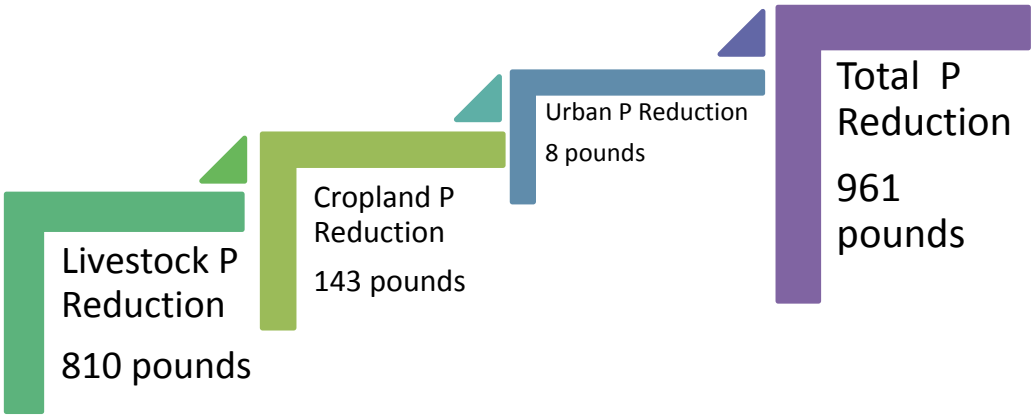

Figure 53. Annual Phosphorus Reduction by Category in Clear Creek Sub Watershed after All BMPs have been Implemented.

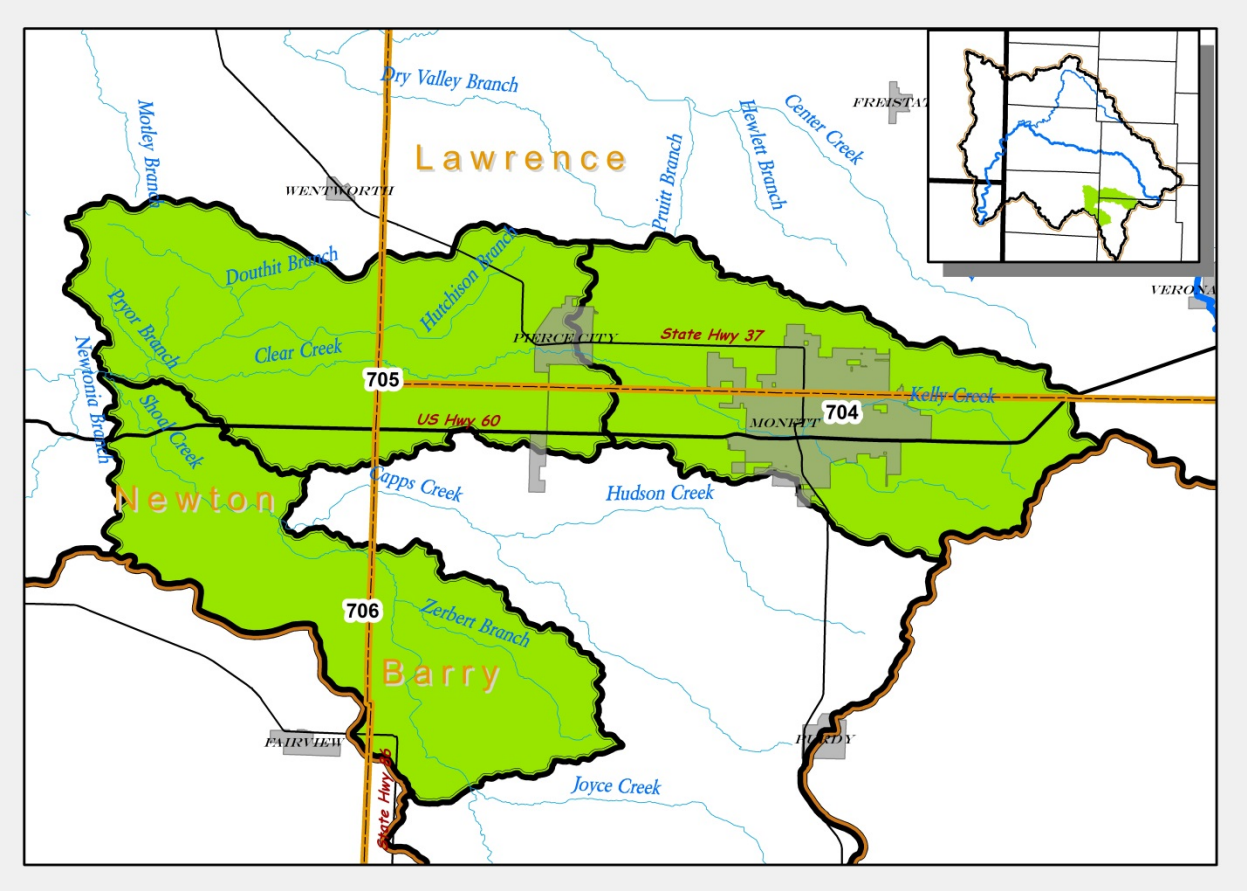

Figure 54. Clear Creek Sub Watershed

Table 145. SWAT Generated Land Use in Clear Creek Sub Watershed.

Land Use	Acres	Percentage of Land Use
Cropland	2,828	4%
Hay and Pasture	40,726	61%
Urban	6,369	10%
Woodland	16,705	25%
Water	34	0%
Total	66,661	100%

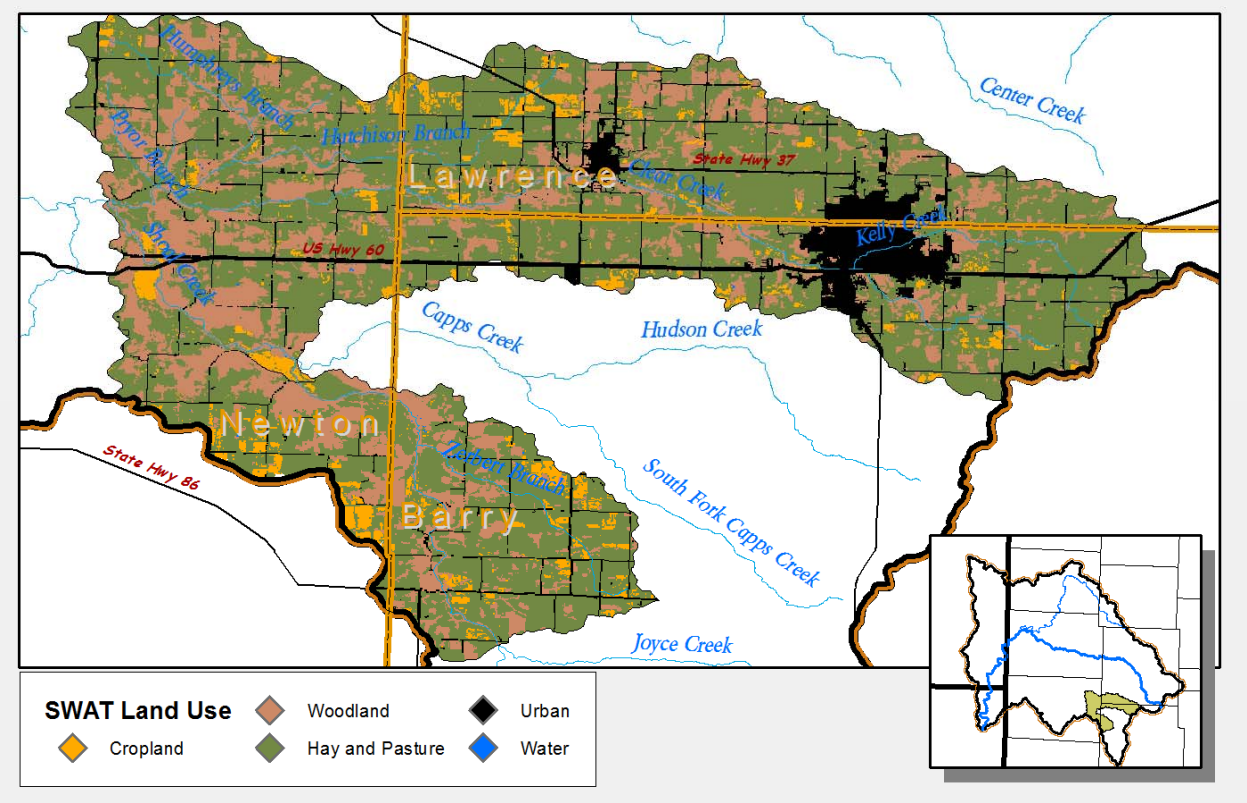

Figure 55. SWAT Generated Land Use for Clear Creek Sub Watershed.

1) Targeted Priority Areas

The SWAT determined priority catchment areas in the Clear Creek Sub Watershed is located in HUC 12 numbers 705 and 706 as shown in the dark green color on the map below. This Priority 1 catchment area will be the top priority for BMP placement for cropland and livestock BMPs. Urban BMPs will be placed in any urban area of the sub watershed.

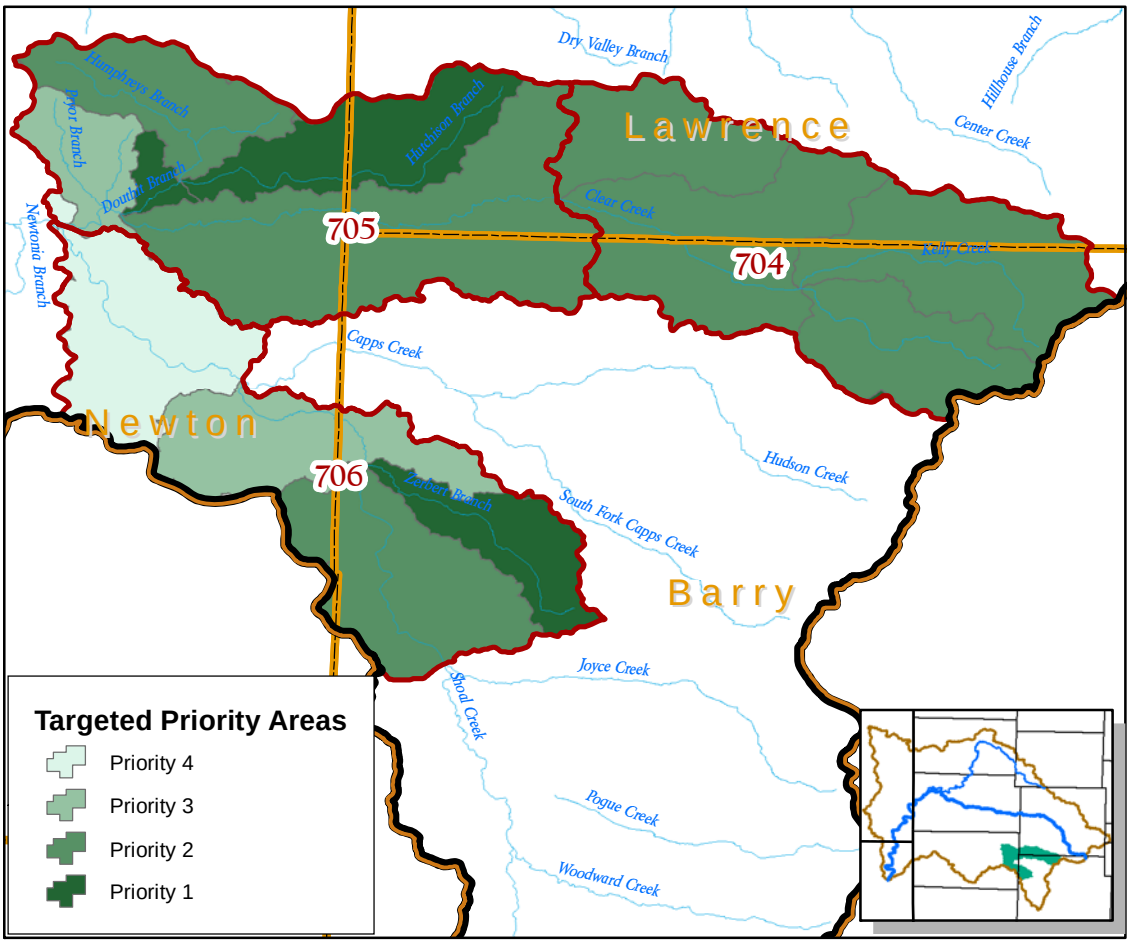

Figure 56. Targeted Priority Areas in Clear Creek Sub Watershed.

2) Adoption Rates for BMPs by Pollutant Source

Table 146. Cropland BMP Adoption Rates in Clear Creek Sub Watershed. *

Clear Creek Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	11	11	11	11	11	11	11	11	85
2	11	11	11	11	11	11	11	11	85
3	11	11	11	11	11	11	11	11	85
4	11	11	11	11	11	11	11	11	85
5	11	11	11	11	11	11	11	11	85
6	11	11	11	11	11	11	11	11	85
7	11	11	11	11	11	11	11	11	85
8	11	11	11	11	11	11	11	11	85
9	11	11	11	11	11	11	11	11	85

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
10	11	11	11	11	11	11	11	11	85
11	11	11	11	11	11	11	11	11	85
12	11	11	11	11	11	11	11	11	85
13	11	11	11	11	11	11	11	11	85
14	11	11	11	11	11	11	11	11	85
15	11	11	11	11	11	11	11	11	85
16	11	11	11	11	11	11	11	11	85
17	11	11	11	11	11	11	11	11	85
18	11	11	11	11	11	11	11	11	85
19	11	11	11	11	11	11	11	11	85
20	11	11	11	11	11	11	11	11	85

***Cropland BMP adoption rates by HUC 12 are provided in the Appendix.**

Table 147. Livestock BMP Adoption Rates in the Clear Creek Sub Wateshed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Adoption (over 20 years)
12	12	4	4	2	4	8	**46**

Table 148. Urban BMP Adoption Rates in the Clear Creek Sub Watershed.

Clear Creek Urban BMP Adoption				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Total Adoption**
1	1			1
2		1		1
3			1	1
4				0
5				0
6	1			1
7		1		1
8			1	1
9				0
10				0
11	1			1
12				0
13		1		1
14			1	1
15				0

Year	Bioswale	Stream Buffers	Permanent Vegetation	Total Adoption
16	1			1
17		1		1
18			1	1
19				0
20				0

3) Pollutant Load Reductions

Table 149. Cropland Erosion Load Reduction in Clear Creek Sub Watershed. *

Clear Creek Annual Soil Erosion Reduction									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	6	1	2	2	3	2	4	4	23
2	11	1	4	4	6	4	7	7	45
3	17	2	6	6	9	7	11	11	68
4	22	3	7	7	12	9	15	15	90
5	28	4	9	9	15	11	19	19	113
6	33	4	11	11	18	13	22	22	136
7	39	5	13	13	21	16	26	26	158
8	44	6	15	15	24	18	30	30	181
9	50	7	17	17	27	20	33	33	203
10	56	7	19	19	30	22	37	37	226
11	61	8	20	20	33	24	41	41	248
12	67	9	22	22	36	27	44	44	271
13	72	10	24	24	39	29	48	48	294
14	78	10	26	26	41	31	52	52	316
15	83	11	28	28	44	33	56	56	339
16	89	12	30	30	47	36	59	59	361
17	94	13	31	31	50	38	63	63	384
18	100	13	33	33	53	40	67	67	407
19	106	14	35	35	56	42	70	70	429
20	111	15	37	37	59	44	74	74	452

***Cropland sediment load reductions by HUC 12 are provided in the Appendix.**

Table 150. Cropland Phosphorus Load Reduction in Clear Creek Sub Watershed. *

Clear Creek Annual Phosphorus Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	21	8	13	13	21	16	26	26	143
2	42	16	26	26	42	31	52	52	287
3	63	23	39	39	63	47	78	78	430
4	83	31	52	52	83	63	104	104	573
5	104	39	65	65	104	78	130	130	717
6	125	47	78	78	125	94	156	156	860
7	146	55	91	91	146	109	182	182	1,004
8	167	63	104	104	167	125	209	209	1,147
9	188	70	117	117	188	141	235	235	1,290
10	209	78	130	130	209	156	261	261	1,434
11	229	86	143	143	229	172	287	287	1,577
12	250	94	156	156	250	188	313	313	1,720
13	271	102	169	169	271	203	339	339	1,864
14	292	109	182	182	292	219	365	365	2,007
15	313	117	195	195	313	235	391	391	2,150
16	334	125	209	209	334	250	417	417	2,294
17	354	133	222	222	354	266	443	443	2,437
18	375	141	235	235	375	282	469	469	2,581
19	396	149	248	248	396	297	495	495	2,724
20	417	156	261	261	417	313	521	521	2,867

***Cropland phosphorus load reductions by HUC 12 are provided in the Appendix.**

Table 151. Cropland Nitrogen Load Reduction in Clear Creek Sub Watershed.

Clear Creek Annual Nitrogen Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	36	22	36	36	58	43	36	72	339
2	72	43	72	72	115	87	72	144	678
3	108	65	108	108	173	130	108	216	1,017
4	144	87	144	144	231	173	144	288	1,355
5	180	108	180	180	288	216	180	360	1,694
6	216	130	216	216	346	260	216	433	2,033
7	252	151	252	252	404	303	252	505	2,372
8	288	173	288	288	461	346	288	577	2,711
9	324	195	324	324	519	389	324	649	3,050

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
10	360	216	360	360	577	433	360	721	3,389
11	397	238	397	397	634	476	397	793	3,728
12	433	260	433	433	692	519	433	865	4,066
13	469	281	469	469	750	562	469	937	4,405
14	505	303	505	505	808	606	505	1,009	4,744
15	541	324	541	541	865	649	541	1,081	5,083
16	577	346	577	577	923	692	577	1,154	5,422
17	613	368	613	613	981	735	613	1,226	5,761
18	649	389	649	649	1,038	779	649	1,298	6,100
19	685	411	685	685	1,096	822	685	1,370	6,438
20	721	433	721	721	1,154	865	721	1,442	6,777

***Cropland nitrogen load reductions by HUC 12 are provided in the Appendix.**

Table 152. Livestock Phosphorus Load Reduction in Clear Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
1,260	5,700	1,900	1,520	1,777	494	3,553	**16,203**

Table 153. Livestock Nitrogen Load Reduction in Clear Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
2,373	10,736	3,579	2,863	3,346	930	6,692	**30,519**

Table 154. Urban Sediment Load Reduction I the Clear Creek Sub Watershed.

Clear Creek Urban BMP Sediment Reduction Rates (tons)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	1.03	0.00	0.00	1.03
2	1.03	1.54	0.00	2.56
3	1.03	1.54	0.10	2.67
4	1.03	1.54	0.10	2.67
5	1.03	1.54	0.10	2.67
6	2.05	1.54	0.10	3.69
7	2.05	3.08	0.10	5.23
8	2.05	3.08	0.21	5.33
9	2.05	3.08	0.21	5.33

Year	Bioswale	Stream Buffers	Permanent Vegetation	Cumulative Load Reduction
10	2.05	3.08	0.21	5.33
11	3.08	3.08	0.21	6.36
12	3.08	3.08	0.21	6.36
13	3.08	4.61	0.21	7.89
14	3.08	4.61	0.31	8.00
15	3.08	4.61	0.31	8.00
16	4.10	4.61	0.31	9.02
17	4.10	6.15	0.31	10.56
18	4.10	6.15	0.41	10.66
19	4.10	6.15	0.41	10.66
20	4.10	6.15	0.41	10.66

Table 155. Urban Phosphorus Load Reduction in the Clear Creek Sub Watershed.

Clear Creek Urban BMP Phosphorus Reduction Rates (pounds)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	7.5	0	0	8
2	7.5	11.25	0	19
3	7.5	11.25	1.425	20
4	7.5	11.25	1.425	20
5	7.5	11.25	1.425	20
6	15	11.25	1.425	28
7	15	22.5	1.425	39
8	15	22.5	2.85	40
9	15	22.5	2.85	40
10	15	22.5	2.85	40
11	22.5	22.5	2.85	48
12	22.5	22.5	2.85	48
13	22.5	33.75	2.85	59
14	22.5	33.75	4.275	61
15	22.5	33.75	4.275	61
16	30	33.75	4.275	68
17	30	45	4.275	79
18	30	45	5.7	81
19	30	45	5.7	81
20	30	45	5.7	81

Table 156. Urban Nitrogen Load Reduction in the Clear Creek Sub Watershed.

Clear Creek Urban BMP Nitrogen Reduction Rates (pounds)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	58.5	0	0	59

Year	Bioswale	Stream Buffers	Permanent Vegetation	Cumulative Load Reduction
2	58.5	87.75	0	146
3	58.5	87.75	11.115	157
4	58.5	87.75	11.115	157
5	58.5	87.75	11.115	157
6	117	87.75	11.115	216
7	117	175.5	11.115	304
8	117	175.5	22.23	315
9	117	175.5	22.23	315
10	117	175.5	22.23	315
11	175.5	175.5	22.23	373
12	175.5	175.5	22.23	373
13	175.5	263.25	22.23	461
14	175.5	263.25	33.345	472
15	175.5	263.25	33.345	472
16	234	263.25	33.345	531
17	234	351	33.345	618
18	234	351	44.46	629
19	234	351	44.46	629
20	234	351	44.46	629

4) Costs of Implementing BMPs

Table 157. Cropland BMP Costs in the Clear Creek Sub Watershed. *

Clear Creek Total Annual Cost of Cropland BMPs, 3% Inflation									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	$828	$416	$832	$416	$1,706	$1,333	$711	$1,333	$7,573
2	$853	$428	$857	$428	$1,757	$1,373	$732	$1,373	$7,800
3	$879	$441	$882	$441	$1,810	$1,414	$754	$1,414	$8,034
4	$905	$454	$909	$454	$1,864	$1,456	$777	$1,456	$8,275
5	$932	$468	$936	$468	$1,920	$1,500	$800	$1,500	$8,524
6	$960	$482	$964	$482	$1,977	$1,545	$824	$1,545	$8,779
7	$989	$496	$993	$496	$2,037	$1,591	$849	$1,591	$9,043
8	$1,019	$511	$1,023	$511	$2,098	$1,639	$874	$1,639	$9,314
9	$1,049	$527	$1,053	$527	$2,161	$1,688	$900	$1,688	$9,593
10	$1,081	$542	$1,085	$542	$2,226	$1,739	$927	$1,739	$9,881
11	$1,113	$559	$1,118	$559	$2,292	$1,791	$955	$1,791	$10,178
12	$1,146	$576	$1,151	$576	$2,361	$1,845	$984	$1,845	$10,483

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
13	$1,181	$593	$1,186	$593	$2,432	$1,900	$1,013	$1,900	$10,797
14	$1,216	$611	$1,221	$611	$2,505	$1,957	$1,044	$1,957	$11,121
15	$1,253	$629	$1,258	$629	$2,580	$2,016	$1,075	$2,016	$11,455
16	$1,290	$648	$1,296	$648	$2,658	$2,076	$1,107	$2,076	$11,799
17	$1,329	$667	$1,334	$667	$2,737	$2,138	$1,141	$2,138	$12,153
18	$1,369	$687	$1,374	$687	$2,819	$2,203	$1,175	$2,203	$12,517
19	$1,410	$708	$1,416	$708	$2,904	$2,269	$1,210	$2,269	$12,893
20	$1,452	$729	$1,458	$729	$2,991	$2,337	$1,246	$2,337	$13,279

*** Costs by HUC 12 are provided in the Appendix.**

Table 158. Livestock BMP Costs in the Clear Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Cost (over 20 years)
$48,000	$84,000	$12,000	$8,000	$24,000	$30,000	$8,000	**$214,000**

Table 159. Urban BMP Costs in the Clear Creek Sub Watershed.

Clear Creek Urban BMP Implementation Cost				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cost**
1	$21,780	$0	$0	$21,780
2	$0	$1,000	$0	$1,000
3	$0	$0	$150	$150
4	$0	$0	$0	$0
5	$0	$0	$0	$0
6	$21,780	$0	$0	$21,780
7	$0	$1,000	$0	$1,000
8	$0	$0	$150	$150
9	$0	$0	$0	$0
10	$0	$0	$0	$0
11	$21,780	$0	$0	$21,780
12	$0	$0	$0	$0
13	$0	$1,000	$0	$1,000
14	$0	$0	$150	$150
15	$0	$0	$0	$0
16	$21,780	$0	$0	$21,780
17	$0	$1,000	$0	$1,000
18	$0	$0	$150	$150

Year	Bioswale	Stream Buffers	Permanent Vegetation	Cost
19	$0	$0	$0	$0
20	$0	$0	$0	$0

5) Totals by Category

Table 160. Clear Creek Sub Watershed Total Phosphorus Load Reduction by Category.

Clear Creek Total Phosphorus Reduction over the 20 Year Life of the Plan		
Best Management Practice Category	**Total Phosphorus Reduction, pounds**	**% of Total Reduction**
Cropland	2,867	15.0%
Livestock	16,203	84.6%
Urban	81	0.4
Total	**19,151**	**100.0%**

Table 161. Clear Creek Sub Watershed Total Cost by Category.

Clear Creek Total Cost over the 20 Year Life of the Plan		
Best Management Practice Category	**Total Cost**	**% of Total Cost**
Cropland	$203,492	40.0%
Livestock	$214,000	42.0%
Urban	$91,720	18.0
Total	**$509,212**	**100.0%**

I White Oak Creek Sub Watershed

The White Oak Creek Sub Watersheds has an impairment for bacteria. Therefore, it will be targeted for livestock BMPs to address the needed bacteria TMDL. Cropland BMPs will also be addressed. Urban BMPs will not apply to this watershed due to a lack of urban areas.

Since phosphorus is tied to manure, it has been calculated that the phosphorus load reduction for control of bacteria in this sub watershed is 3,312 pounds of phosphorus over the 20 year life of the plan. If all livestock BMPs are implemented in this watershed, 172 pounds of phosphorus will be reduced annually. In addition to the phosphorus reduction that is connected to bacteria contribution, phosphorus from cropland BMPs will contribute 374 pounds. **This load reduction will be attained if all BMPs are implemented in the watershed.**

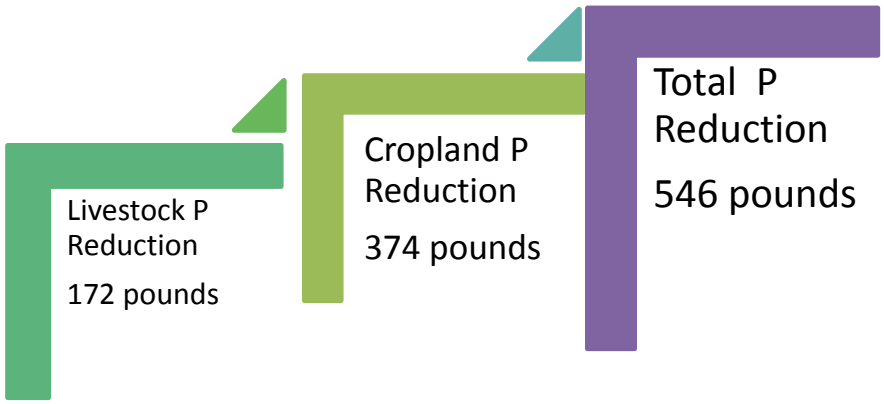

Figure 57. Annual Phosphorus Reduction by Category in White Oak Creek Sub Watershed after All BMPs have been Implemented.

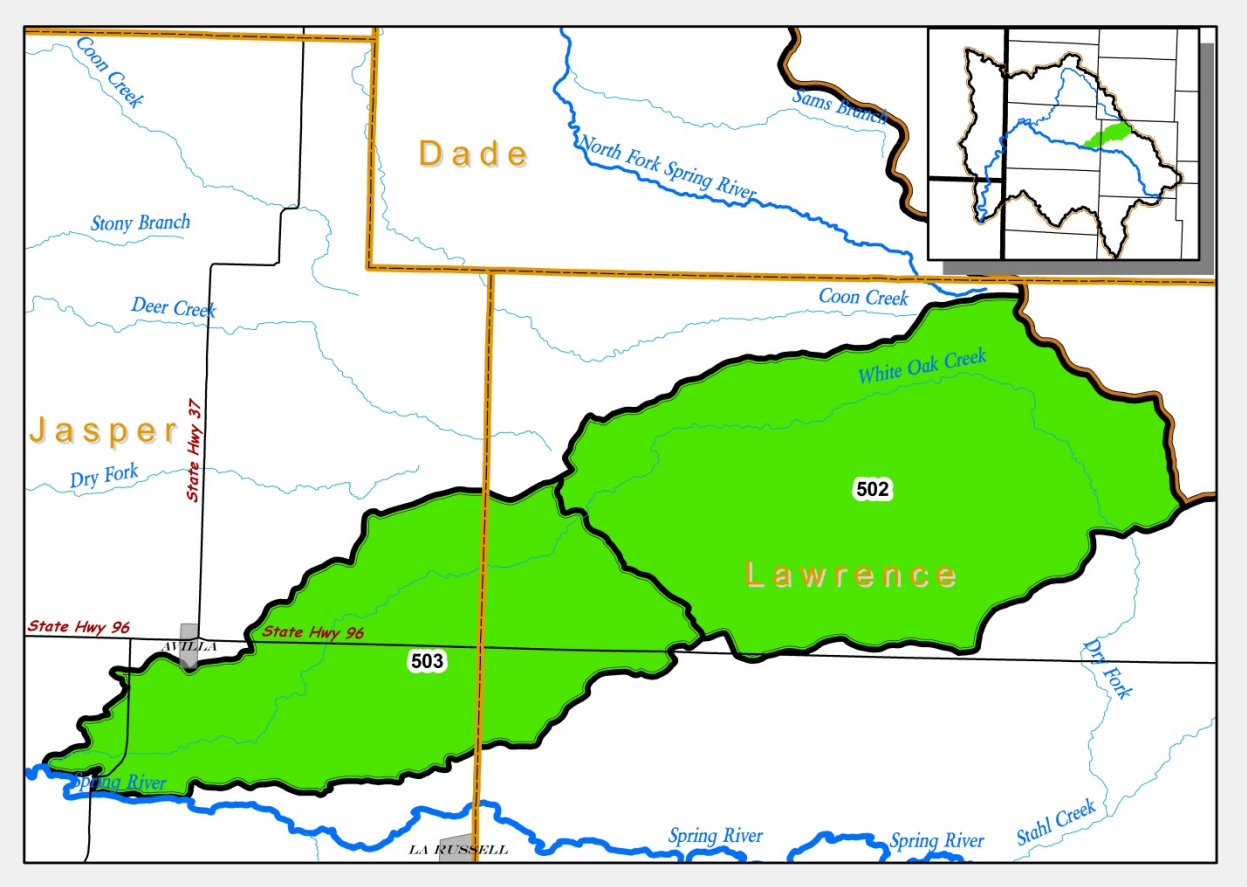

Figure 58. White Oak Creek Sub Watershed.

Table 162. SWAT Generated Land Use in the White Oak Creek Sub Watershed.

Land Use	Acres	Percentage of Land Use
Cropland	4,373	11%
Hay and Pasture	25,484	62%
Urban	1,719	4%
Woodland	9,640	23%
Water	84	0%
Total	41,300	100%

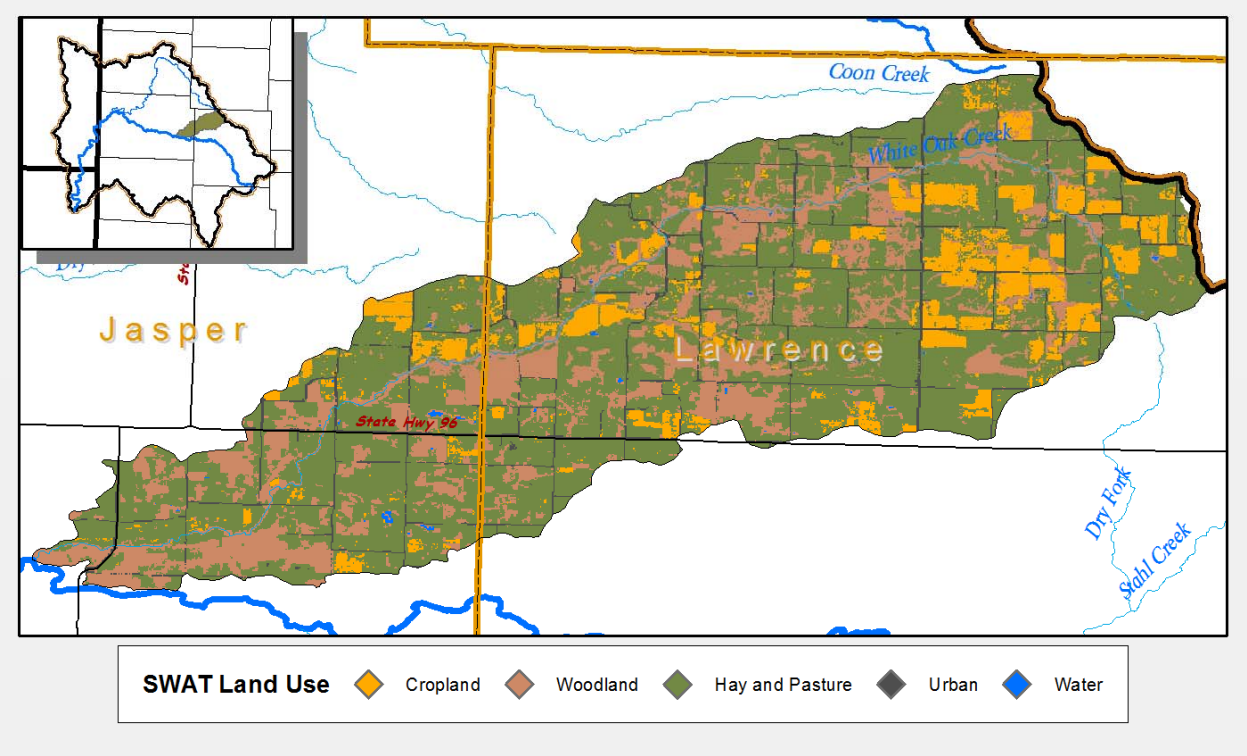

Figure 59. SWAT Generated Land Use for White Oak Creek Sub Watershed.

1) Targeted Priority Areas

There are no Priority 1 Targeted catchment areas in the White Oak Creek Sub Watershed. Therefore, cropland and livestock BMP placement will be in the Priority 2 targeted areas in HUC 12s 502 and 503.

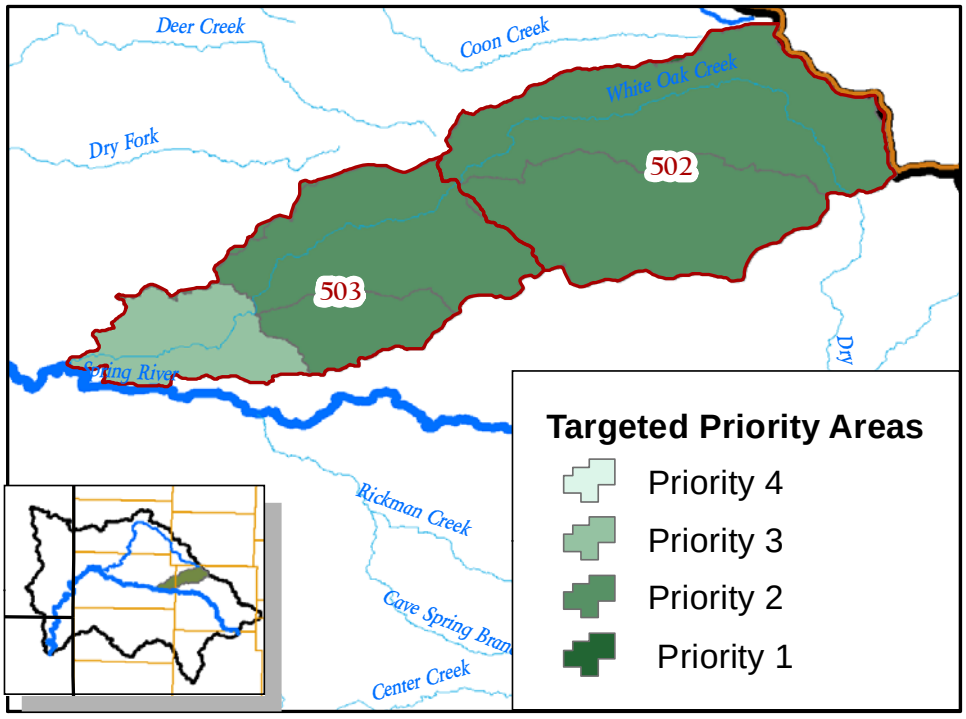

Figure 60. Targeted Priority Areas in White Oak Creek Sub Watershed.

2) Adoption Rates for BMPs by Pollutant Source

Table 163. Cropland BMPs Adoption Rate in the White Oak Creek Sub Watershed. *

Sub Watershed #502 White Oak Creek Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	31	31	31	31	31	31	31	31	247
2	31	31	31	31	31	31	31	31	247
3	31	31	31	31	31	31	31	31	247
4	31	31	31	31	31	31	31	31	247
5	31	31	31	31	31	31	31	31	247
6	31	31	31	31	31	31	31	31	247
7	31	31	31	31	31	31	31	31	247
8	31	31	31	31	31	31	31	31	247
9	31	31	31	31	31	31	31	31	247
10	31	31	31	31	31	31	31	31	247
11	31	31	31	31	31	31	31	31	247
12	31	31	31	31	31	31	31	31	247
13	31	31	31	31	31	31	31	31	247
14	31	31	31	31	31	31	31	31	247

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
15	31	31	31	31	31	31	31	31	247
16	31	31	31	31	31	31	31	31	247
17	31	31	31	31	31	31	31	31	247
18	31	31	31	31	31	31	31	31	247
19	31	31	31	31	31	31	31	31	247
20	31	31	31	31	31	31	31	31	247

***Adoption rates by HUC 12 are provided in the Appendix.**

Table 164. Livestock BMP Adoption Rates in White Oak Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Adoption (over 20 years)
3	3	2	2	0	0	0	**10**

3) Pollutant Load Reductions

Table 165. Cropland Erosion Load Reduction in White Oak Creek Sub Watershed.*

Sub Watershed #502 White Oak Creek Annual Soil Erosion Reduction									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	25	3	8	8	13	10	16	16	100
2	49	7	16	16	26	20	33	33	200
3	74	10	25	25	39	29	49	49	300
4	98	13	33	33	52	39	66	66	400
5	123	16	41	41	66	49	82	82	500
6	147	20	49	49	79	59	98	98	600
7	172	23	57	57	92	69	115	115	700
8	197	26	66	66	105	79	131	131	800
9	221	29	74	74	118	88	147	147	900
10	246	33	82	82	131	98	164	164	999
11	270	36	90	90	144	108	180	180	1,099
12	295	39	98	98	157	118	197	197	1,199
13	320	43	107	107	170	128	213	213	1,299
14	344	46	115	115	184	138	229	229	1,399
15	369	49	123	123	197	147	246	246	1,499
16	393	52	131	131	210	157	262	262	1,599
17	418	56	139	139	223	167	279	279	1,699

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
18	442	59	147	147	236	177	295	295	1,799
19	467	62	156	156	249	187	311	311	1,899
20	492	66	164	164	262	197	328	328	1,999

***Erosion load reductions by HUC 12 are provided in the Appendix.**

Table 166. Cropland Phosphorus Load Reduction in White Oak Creek Sub Watershed.*

Sub Watershed #502 White Oak Creek Annual Phosphorus Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	54	20	34	34	54	41	68	68	374
2	109	41	68	68	109	82	136	136	748
3	163	61	102	102	163	122	204	204	1,122
4	218	82	136	136	218	163	272	272	1,496
5	272	102	170	170	272	204	340	340	1,870
6	326	122	204	204	326	245	408	408	2,244
7	381	143	238	238	381	286	476	476	2,618
8	435	163	272	272	435	326	544	544	2,992
9	490	184	306	306	490	367	612	612	3,366
10	544	204	340	340	544	408	680	680	3,740
11	598	224	374	374	598	449	748	748	4,114
12	653	245	408	408	653	490	816	816	4,488
13	707	265	442	442	707	530	884	884	4,862
14	762	286	476	476	762	571	952	952	5,236
15	816	306	510	510	816	612	1,020	1,020	5,610
16	870	326	544	544	870	653	1,088	1,088	5,984
17	925	347	578	578	925	694	1,156	1,156	6,358
18	979	367	612	612	979	734	1,224	1,224	6,732
19	1,034	388	646	646	1,034	775	1,292	1,292	7,106
20	1,088	408	680	680	1,088	816	1,360	1,360	7,480

***Phosphorus load reductions by HUC 12 are provided in the Appendix.**

Table 167. Cropland Nitrogen Load Reduction in White Oak Creek Sub Watershed.*

Sub Watershed #502 White Oak Creek Annual Nitrogen Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	106	64	106	106	170	127	106	212	996
2	212	127	212	212	339	254	212	424	1,993

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
3	318	191	318	318	509	382	318	636	2,989
4	424	254	424	424	678	509	424	848	3,986
5	530	318	530	530	848	636	530	1,060	4,982
6	636	382	636	636	1,018	763	636	1,272	5,978
7	742	445	742	742	1,187	890	742	1,484	6,975
8	848	509	848	848	1,357	1,018	848	1,696	7,971
9	954	572	954	954	1,526	1,145	954	1,908	8,968
10	1,060	636	1,060	1,060	1,696	1,272	1,060	2,120	9,964
11	1,166	700	1,166	1,166	1,866	1,399	1,166	2,332	10,960
12	1,272	763	1,272	1,272	2,035	1,526	1,272	2,544	11,957
13	1,378	827	1,378	1,378	2,205	1,654	1,378	2,756	12,953
14	1,484	890	1,484	1,484	2,374	1,781	1,484	2,968	13,950
15	1,590	954	1,590	1,590	2,544	1,908	1,590	3,180	14,946
16	1,696	1,018	1,696	1,696	2,714	2,035	1,696	3,392	15,943
17	1,802	1,081	1,802	1,802	2,883	2,162	1,802	3,604	16,939
18	1,908	1,145	1,908	1,908	3,053	2,290	1,908	3,816	17,935
19	2,014	1,208	2,014	2,014	3,222	2,417	2,014	4,028	18,932
20	2,120	1,272	2,120	2,120	3,392	2,544	2,120	4,240	19,928

***Sediment load reductions by HUC 12 are provided in the Appendix.**

Table 168. Livestock Phosphorus Load Reductions in White Oak Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
315	1,425	950	760	0	0	0	**3,450**

Table 169. Livestock Nitrogen Load Reductions in the White Oak Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
593	2,684	1,789	1,431	0	0	0	**6,498**

4) Costs of Implementing BMPs

Table 170. Cropland Costs of Implementing BMPs in White Oak Creek Sub Watershed.*

Sub Watershed #502 White Oak Creek Total Annual Cost of Cropland BMPs, 3% Inflation									
Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
1	$2,402	$1,206	$2,412	$1,206	$4,947	$3,865	$2,061	$3,865	$21,963
2	$2,474	$1,242	$2,484	$1,242	$5,095	$3,981	$2,123	$3,981	$22,622
3	$2,548	$1,279	$2,558	$1,279	$5,248	$4,100	$2,187	$4,100	$23,301
4	$2,625	$1,318	$2,635	$1,318	$5,406	$4,223	$2,252	$4,223	$24,000
5	$2,704	$1,357	$2,714	$1,357	$5,568	$4,350	$2,320	$4,350	$24,720
6	$2,785	$1,398	$2,796	$1,398	$5,735	$4,480	$2,390	$4,480	$25,461
7	$2,868	$1,440	$2,880	$1,440	$5,907	$4,615	$2,461	$4,615	$26,225
8	$2,954	$1,483	$2,966	$1,483	$6,084	$4,753	$2,535	$4,753	$27,012
9	$3,043	$1,527	$3,055	$1,527	$6,267	$4,896	$2,611	$4,896	$27,822
10	$3,134	$1,573	$3,147	$1,573	$6,455	$5,043	$2,689	$5,043	$28,657
11	$3,228	$1,621	$3,241	$1,621	$6,648	$5,194	$2,770	$5,194	$29,516
12	$3,325	$1,669	$3,338	$1,669	$6,848	$5,350	$2,853	$5,350	$30,402
13	$3,425	$1,719	$3,438	$1,719	$7,053	$5,510	$2,939	$5,510	$31,314
14	$3,527	$1,771	$3,542	$1,771	$7,265	$5,676	$3,027	$5,676	$32,253
15	$3,633	$1,824	$3,648	$1,824	$7,483	$5,846	$3,118	$5,846	$33,221
16	$3,742	$1,879	$3,757	$1,879	$7,707	$6,021	$3,211	$6,021	$34,218
17	$3,855	$1,935	$3,870	$1,935	$7,938	$6,202	$3,308	$6,202	$35,244
18	$3,970	$1,993	$3,986	$1,993	$8,177	$6,388	$3,407	$6,388	$36,302
19	$4,089	$2,053	$4,106	$2,053	$8,422	$6,580	$3,509	$6,580	$37,391
20	$4,212	$2,114	$4,229	$2,114	$8,674	$6,777	$3,614	$6,777	$38,512

*Costs by HUC 12 are provided in the Appendix.

Table 171. Livestock Costs of Implementing BMPs in White Oak Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Cost (over 20 years)
$12,000	$21,000	$6,000	$4,000	$0	$0	$0	**$43,000**

5) Totals by Category

Table 172. White Oak Creek Sub Watershed Total Phosphorus Load Reduction by Category.

White Oak Creek Total Phosphorus Reduction over the 20 Year Life of the Plan		
Best Management Practice Category	Total Phosphorus Reduction, pounds	% of Total Reduction
Cropland	7,480	68%
Livestock	3,450	32%
Total	**10,930**	**100%**

Table 173. White Oak Creek Sub Watershed Total Cost by Category.

White Oak Creek Total Cost over the 20 Year Life of the Plan		
Best Management Practice Category	Total Cost	% of Total Cost
Cropland	$590,154	93%
Livestock	$43,000	7%
Total	**$633,154**	**100%**

J Honey Creek Sub Watershed

The Honey Creek Sub Watershed has an impairment for bacteria. Therefore, it will be targeted for livestock BMPs to address the needed bacteria TMDL. Cropland BMPs will also be addressed. Urban BMPs will not apply to this watershed due to a lack of urban areas.

Since phosphorus is tied to manure, it has been calculated that the phosphorus load reduction for control of bacteria in this sub watershed is 9,821 pounds of phosphorus over the 20 year life of the plan. If all livestock BMPs are implemented in this watershed, 503 pounds of phosphorus will be reduced annually. In addition to the phosphorus reduction that is connected to bacteria contribution, phosphorus from cropland BMPs will contribute 269 pounds. **This load reduction will be attained if all BMPs are implemented in the watershed.**

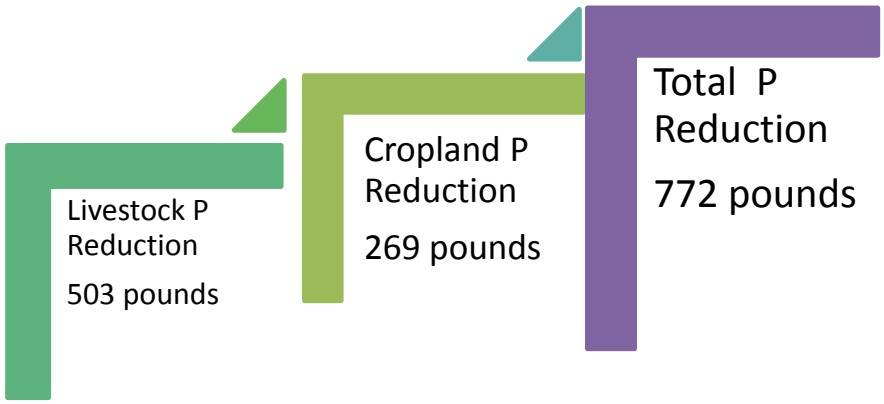

Figure 61. Annual Phosphorus Reduction by Category in Honey Creek Sub Watershed after All BMPs have been Implemented.

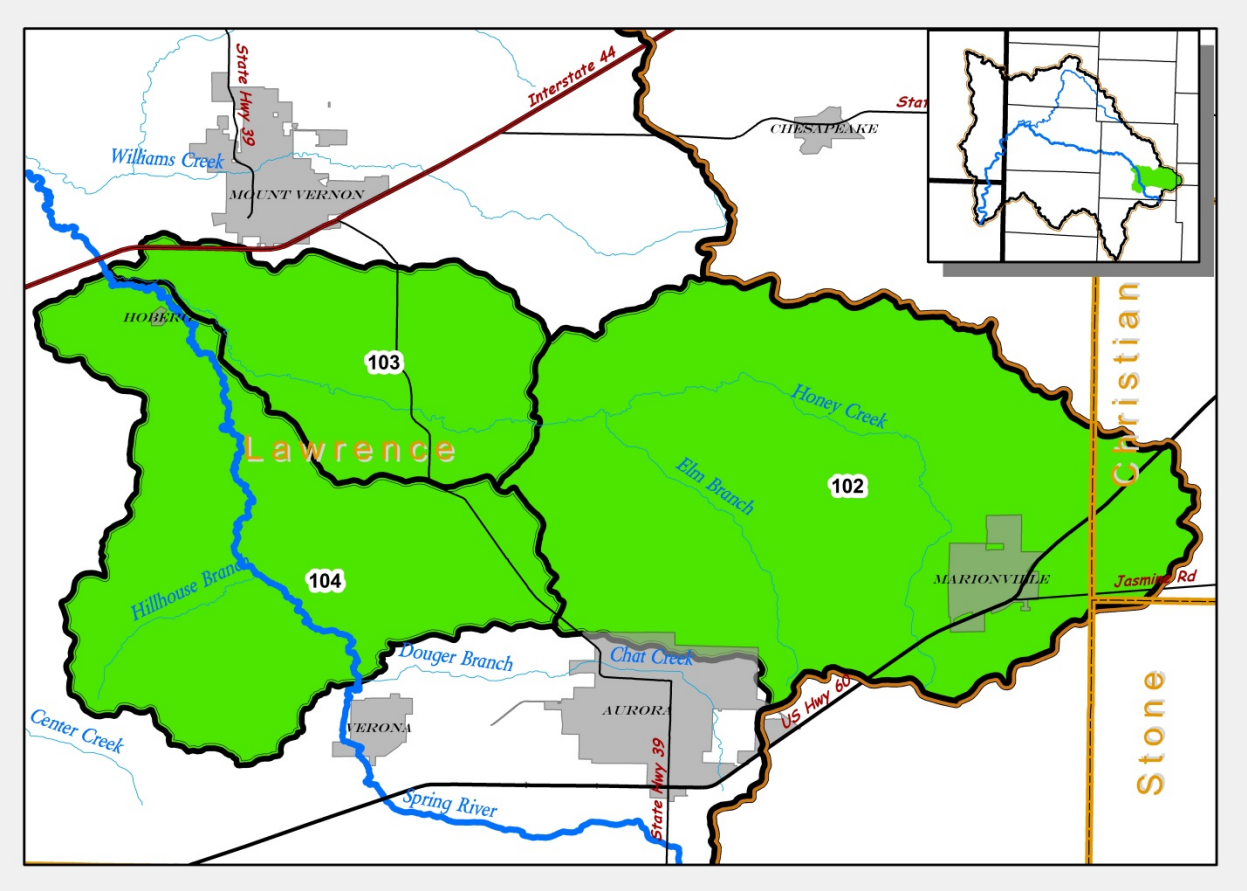

Figure 62. Honey Creek Sub Watershed.

Table 174. SWAT Generated Land Use in Honey Creek Sub Watershed.

Land Use	Acres	Percentage of Land Use
Cropland	2,823	4%
Hay and Pasture	45,024	71%
Urban	4,505	7%
Woodland	11,358	18%
Water	21	0%
Total	63,731	100%

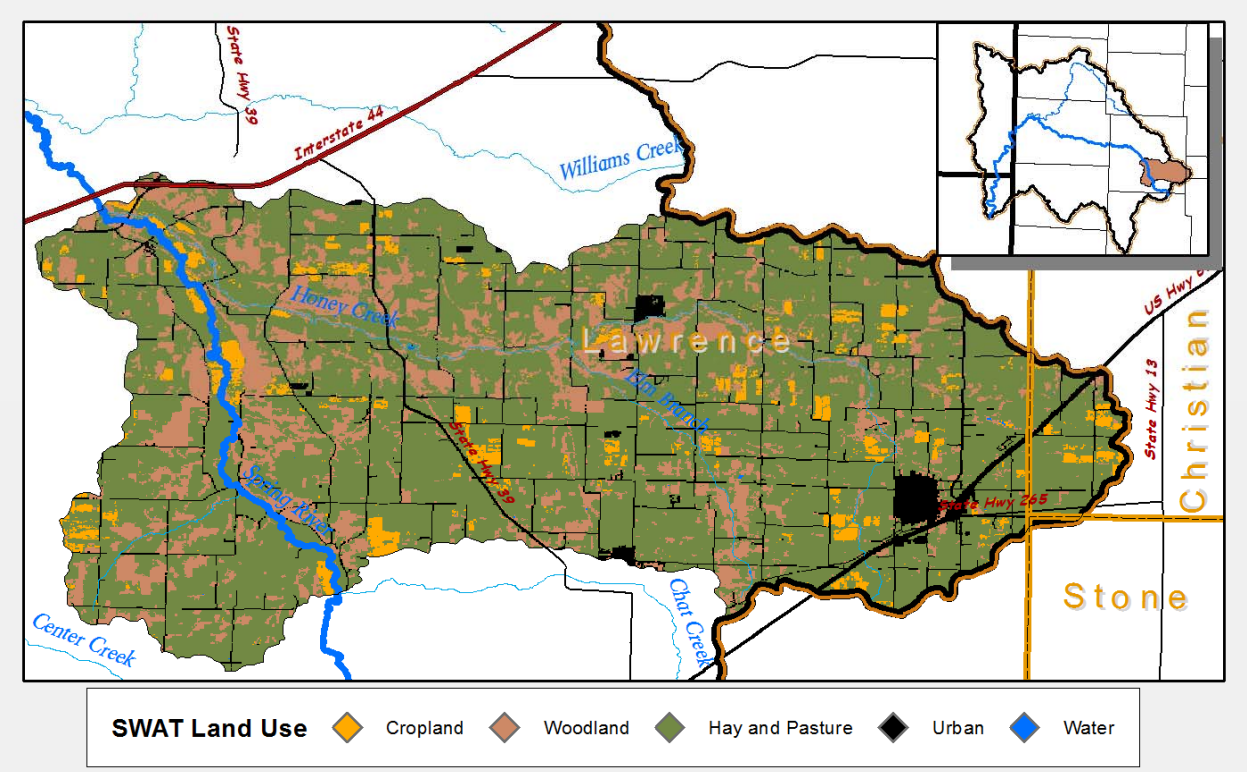

Figure 63. SWAT Generated Land Use for Honey Creek Sub Watershed.

1) Targeted Priority Areas

The SWAT determined priority catchment area in Honey Creek is located in HUC 102 as shown in the dark green color on the map below. This Priority 1 catchment area will be the top priority for BMP placement for cropland and livestock BMPs.

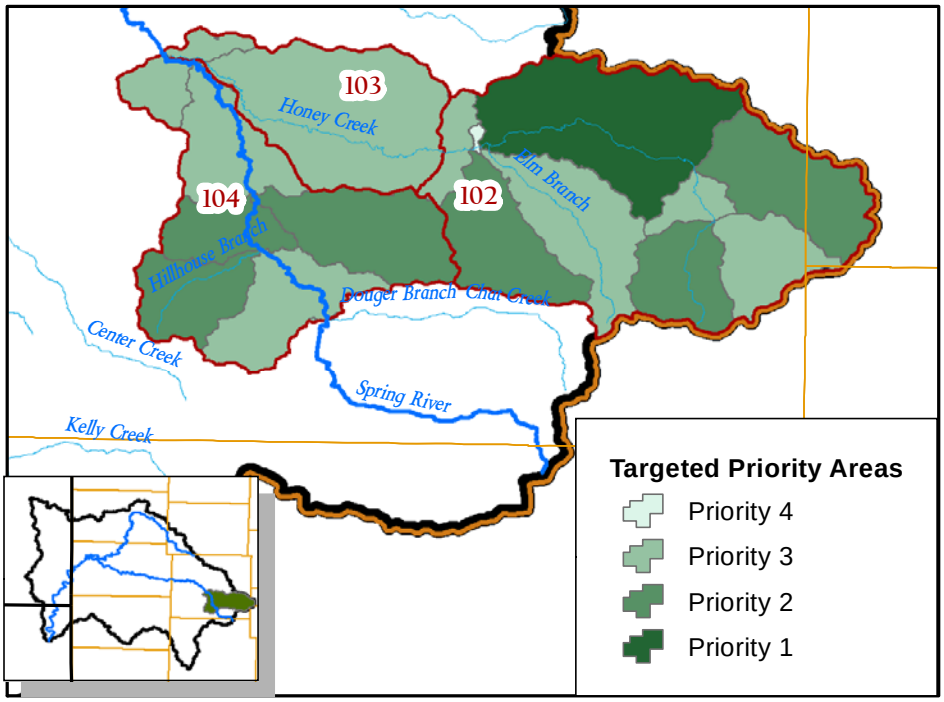

Figure 64. Targeted Priority Areas in Honey Creek Sub Watershed.

2) Adoption Rates for BMPs by Pollutant Source

Table 175. Cropland BMP Adoption Rates in Honey Creek Sub Watershed.*

Honey Creek Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	102	102	102	102	102	102	102	102	813
2	102	102	102	102	102	102	102	102	813
3	102	102	102	102	102	102	102	102	813
4	102	102	102	102	102	102	102	102	813
5	102	102	102	102	102	102	102	102	813
6	102	102	102	102	102	102	102	102	813
7	102	102	102	102	102	102	102	102	813
8	102	102	102	102	102	102	102	102	813
9	102	102	102	102	102	102	102	102	813
10	102	102	102	102	102	102	102	102	813
11	102	102	102	102	102	102	102	102	813
12	102	102	102	102	102	102	102	102	813
13	102	102	102	102	102	102	102	102	813
14	102	102	102	102	102	102	102	102	813
15	102	102	102	102	102	102	102	102	813

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
16	102	102	102	102	102	102	102	102	813
17	102	102	102	102	102	102	102	102	813
18	102	102	102	102	102	102	102	102	813
19	102	102	102	102	102	102	102	102	813
20	102	102	102	102	102	102	102	102	813

***Cropland BMP adoption rates by HUC 12 are provided in the Appendix.**

Table 176. Livestock BMP Adoption Rates in the Honey Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Adoption (over 20 years)
8	8	3	4	2	2	1	**28**

3) Pollutant Load Reductions

Table 177. Cropland Erosion Load Reduction in Honey Creek Sub Watershed.*

Honey Creek Annual Annual Soil Erosion Reduction									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	40	5	13	13	21	16	27	27	164
2	81	11	27	27	43	32	54	54	327
3	121	16	40	40	64	48	81	81	491
4	161	21	54	54	86	64	107	107	655
5	201	27	67	67	107	81	134	134	819
6	242	32	81	81	129	97	161	161	982
7	282	38	94	94	150	113	188	188	1,146
8	322	43	107	107	172	129	215	215	1,310
9	362	48	121	121	193	145	242	242	1,474
10	403	54	134	134	215	161	268	268	1,637
11	443	59	148	148	236	177	295	295	1,801
12	483	64	161	161	258	193	322	322	1,965
13	523	70	174	174	279	209	349	349	2,129
14	564	75	188	188	301	225	376	376	2,292
15	604	81	201	201	322	242	403	403	2,456
16	644	86	215	215	344	258	429	429	2,620
17	684	91	228	228	365	274	456	456	2,783

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
18	725	97	242	242	387	290	483	483	2,947
19	765	102	255	255	408	306	510	510	3,111
20	805	107	268	268	429	322	537	537	3,275

***Cropland erosion load reductions by HUC 12 are provided in the Appendix.**

Table 178. Cropland Phosphorus Load Reduction in Honey Creek Sub Watershed.*

Honey Creek Annual Phosphorus Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	167	63	105	105	167	126	209	209	1,151
2	335	126	209	209	335	251	418	418	2,301
3	502	188	314	314	502	377	628	628	3,452
4	669	251	418	418	669	502	837	837	4,603
5	837	314	523	523	837	628	1,046	1,046	5,753
6	1,004	377	628	628	1,004	753	1,255	1,255	6,904
7	1,172	439	732	732	1,172	879	1,464	1,464	8,054
8	1,339	502	837	837	1,339	1,004	1,674	1,674	9,205
9	1,506	565	941	941	1,506	1,130	1,883	1,883	10,356
10	1,674	628	1,046	1,046	1,674	1,255	2,092	2,092	11,506
11	1,841	690	1,151	1,151	1,841	1,381	2,301	2,301	12,657
12	2,008	753	1,255	1,255	2,008	1,506	2,510	2,510	13,808
13	2,176	816	1,360	1,360	2,176	1,632	2,720	2,720	14,958
14	2,343	879	1,464	1,464	2,343	1,757	2,929	2,929	16,109
15	2,510	941	1,569	1,569	2,510	1,883	3,138	3,138	17,260
16	2,678	1,004	1,674	1,674	2,678	2,008	3,347	3,347	18,410
17	2,845	1,067	1,778	1,778	2,845	2,134	3,557	3,557	19,561
18	3,013	1,130	1,883	1,883	3,013	2,259	3,766	3,766	20,711
19	3,180	1,192	1,987	1,987	3,180	2,385	3,975	3,975	21,862
20	3,347	1,255	2,092	2,092	3,347	2,510	4,184	4,184	23,013

***Cropland phosphorus load reductions by HUC 12 are provided in the Appendix.**

Table 179. Cropland Nitrogen Load Reduction in Honey Creek Sub Watershed.*

Honey Creek Annual Nitrogen Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	266	160	266	266	426	319	266	532	2,502
2	532	319	532	532	852	639	532	1,064	5,003

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
3	798	479	798	798	1,277	958	798	1,597	7,505
4	1,064	639	1,064	1,064	1,703	1,277	1,064	2,129	10,006
5	1,331	798	1,331	1,331	2,129	1,597	1,331	2,661	12,508
6	1,597	958	1,597	1,597	2,555	1,916	1,597	3,193	15,009
7	1,863	1,118	1,863	1,863	2,981	2,235	1,863	3,726	17,511
8	2,129	1,277	2,129	2,129	3,406	2,555	2,129	4,258	20,012
9	2,395	1,437	2,395	2,395	3,832	2,874	2,395	4,790	22,514
10	2,661	1,597	2,661	2,661	4,258	3,193	2,661	5,322	25,015
11	2,927	1,756	2,927	2,927	4,684	3,513	2,927	5,855	27,517
12	3,193	1,916	3,193	3,193	5,109	3,832	3,193	6,387	30,018
13	3,460	2,076	3,460	3,460	5,535	4,151	3,460	6,919	32,520
14	3,726	2,235	3,726	3,726	5,961	4,471	3,726	7,451	35,021
15	3,992	2,395	3,992	3,992	6,387	4,790	3,992	7,984	37,523
16	4,258	2,555	4,258	4,258	6,813	5,109	4,258	8,516	40,024
17	4,524	2,714	4,524	4,524	7,238	5,429	4,524	9,048	42,526
18	4,790	2,874	4,790	4,790	7,664	5,748	4,790	9,580	45,027
19	5,056	3,034	5,056	5,056	8,090	6,067	5,056	10,112	47,529
20	5,322	3,193	5,322	5,322	8,516	6,387	5,322	10,645	50,030

***Cropland nitrogen load reductions by HUC 12 are provided in the Appendix.**

Table 180. Livestock Phosphorus Load Reduction in the Honey Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
840	3,800	1,425	1,520	1,777	247	444	**10,052**

Table 181 Livestock Nitrogen Load Reduction in the Honey Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
1,582	7,157	2,684	2,863	3,346	465	837	**18,934**

4) Costs of Implementing BMPs

Table 182. Cropland Costs of Implementing BMPs In the Honey Creek Sub Watershed.*

Honey Creek Total Annual Cost of Cropland BMPs, 3% Inflation									
Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
1	$7,892	$3,962	$7,923	$3,962	$16,253	$12,697	$6,772	$12,697	$72,157
2	$8,128	$4,080	$8,161	$4,080	$16,740	$13,078	$6,975	$13,078	$74,322
3	$8,372	$4,203	$8,406	$4,203	$17,242	$13,471	$7,184	$13,471	$76,551
4	$8,623	$4,329	$8,658	$4,329	$17,760	$13,875	$7,400	$13,875	$78,848
5	$8,882	$4,459	$8,918	$4,459	$18,292	$14,291	$7,622	$14,291	$81,213
6	$9,149	$4,593	$9,185	$4,593	$18,841	$14,720	$7,850	$14,720	$83,650
7	$9,423	$4,730	$9,461	$4,730	$19,406	$15,161	$8,086	$15,161	$86,159
8	$9,706	$4,872	$9,744	$4,872	$19,989	$15,616	$8,329	$15,616	$88,744
9	$9,997	$5,018	$10,037	$5,018	$20,588	$16,085	$8,578	$16,085	$91,406
10	$10,297	$5,169	$10,338	$5,169	$21,206	$16,567	$8,836	$16,567	$94,148
11	$10,606	$5,324	$10,648	$5,324	$21,842	$17,064	$9,101	$17,064	$96,973
12	$10,924	$5,484	$10,967	$5,484	$22,497	$17,576	$9,374	$17,576	$99,882
13	$11,252	$5,648	$11,296	$5,648	$23,172	$18,103	$9,655	$18,103	$102,878
14	$11,589	$5,818	$11,635	$5,818	$23,867	$18,646	$9,945	$18,646	$105,965
15	$11,937	$5,992	$11,984	$5,992	$24,583	$19,206	$10,243	$19,206	$109,144
16	$12,295	$6,172	$12,344	$6,172	$25,321	$19,782	$10,550	$19,782	$112,418
17	$12,664	$6,357	$12,714	$6,357	$26,081	$20,375	$10,867	$20,375	$115,791
18	$13,044	$6,548	$13,096	$6,548	$26,863	$20,987	$11,193	$20,987	$119,264
19	$13,435	$6,744	$13,489	$6,744	$27,669	$21,616	$11,529	$21,616	$122,842
20	$13,838	$6,947	$13,893	$6,947	$28,499	$22,265	$11,875	$22,265	$126,528

*Cropland Costs by HUC 12 are provided in the Appendix.

Table 183. Livestock Costs of Implementing BMPs in the Honey Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Cost (over 20 years)
$32,000	$56,000	$9,000	$8,000	$24,000	$15,000	$1,000	**$145,000**

5) Totals by Category

Table 184. Honey Creek Sub Watershed Total Phosphorus Load Reduction by Category.

Honey Creek Total Phosphorus Reduction over the 20 Year Life of the Plan		
Best Management Practice Category	Total Phosphorus Reduction, pounds	% of Total Reduction
Cropland	5,389	35%
Livestock	10,052	65%

Best Management Practice Category	Total Phosphorus Reduction, pounds	% of Total Reduction
Total	**15,441**	**100%**

Table 185. Honey Creek Sub Watershed Total Cost by Category.

Honey Creek Total Cost over the 20 Year Life of the Plan		
Best Management Practice Category	Total Cost	% of Total Cost
Cropland	$1,938,882	93%
Livestock	$145,000	7%
Total	**$2,083,882**	**100%**

K Jones Creek

The Jones Creek Sub Watershed has an impairment for bacteria. Therefore, it will be targeted for livestock BMPs to address the needed bacteria TMDL. Cropland BMPs will also be addressed. Urban BMPs will not apply to this watershed due to a lack of urban area.

Since phosphorus is tied to manure, it has been calculated that the phosphorus load reduction for control of bacteria in this sub watershed is 13,371 pounds of phosphorus over the 20 year life of the plan. If all livestock BMPs are implemented in this watershed, 731 pounds of phosphorus will be reduced annually. In addition to the phosphorus reduction that is connected to bacteria contribution, phosphorus from cropland BMPs and urban BMPs will contribute 201 pounds. **This load reduction will be attained if all BMPs are implemented in the watershed.**

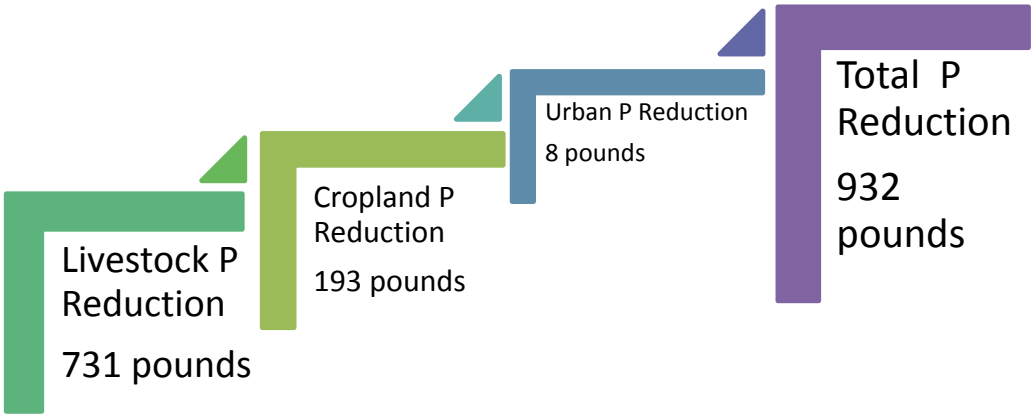

Figure 65. Annual Phosphorus Reduction by Category in Jones Creek Sub Watershed after All BMPs have been Implemented.

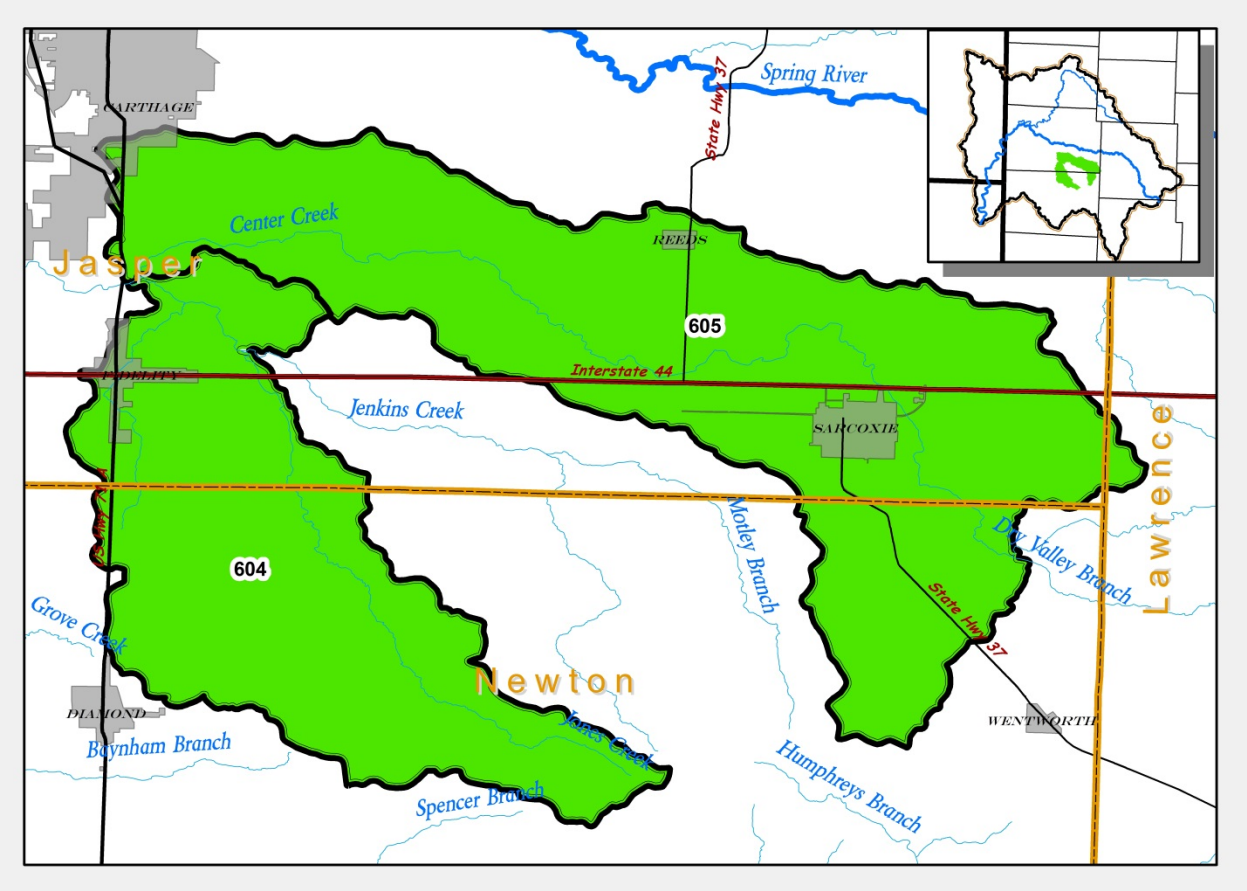

Figure 66. Jones Creek Sub Watershed.

Table 186. SWAT Generated Land Use in the Jones Creek Sub Watershed.

Land Use	Acres	Percentage of Land Use
Cropland	2,748	5%
Hay and Pasture	36,270	63%
Urban	3,760	7%
Woodland	14,356	25%
Water	131	0%
Total	57,265	100%

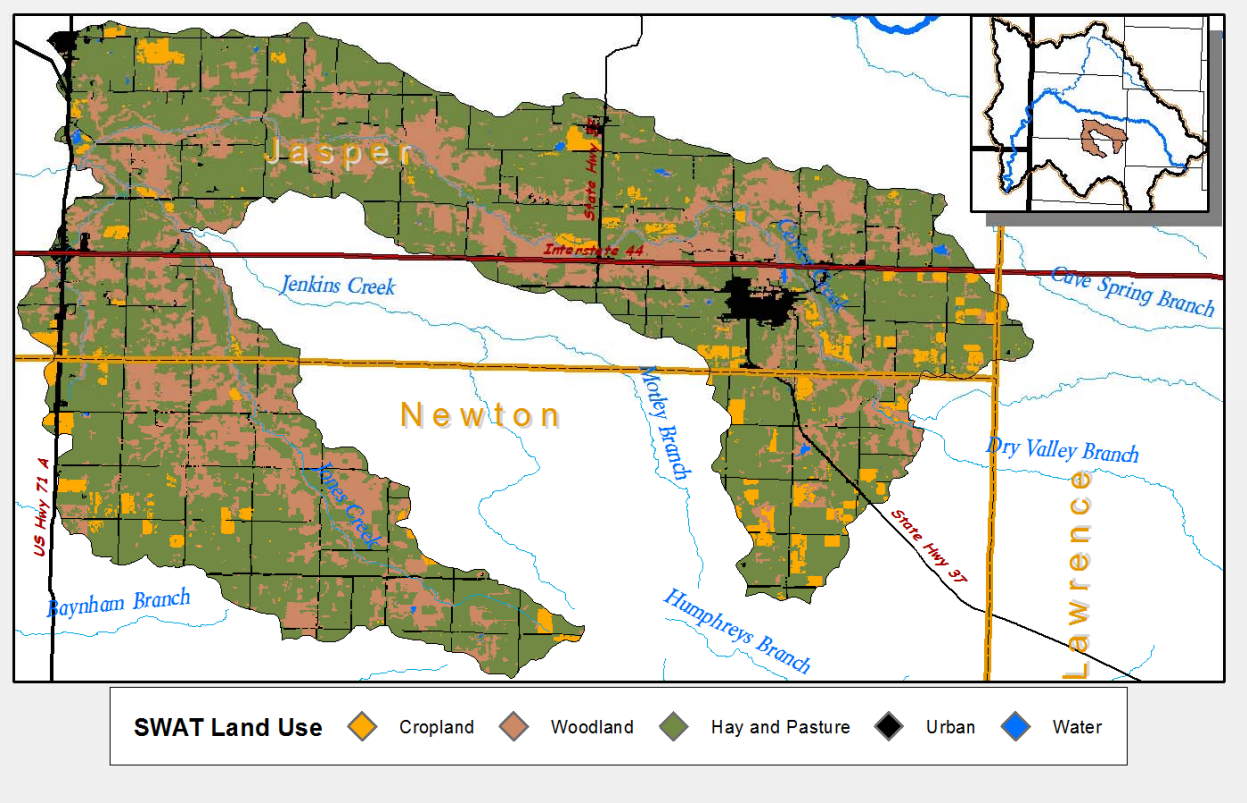

Figure 67. SWAT Generated Land Use in the Jones Creek Sub Watershed

1) Targeted Priority Areas

There are no Priority 1 Targeted Catchment Areas in the Jones Creek Sub Watershed. Therefore, BMP placement for cropland and livestock will be in Priority 2 catchment areas as shown in the medium green color in the map below. Urban BMPs will be placed in any urban area of the sub watershed.

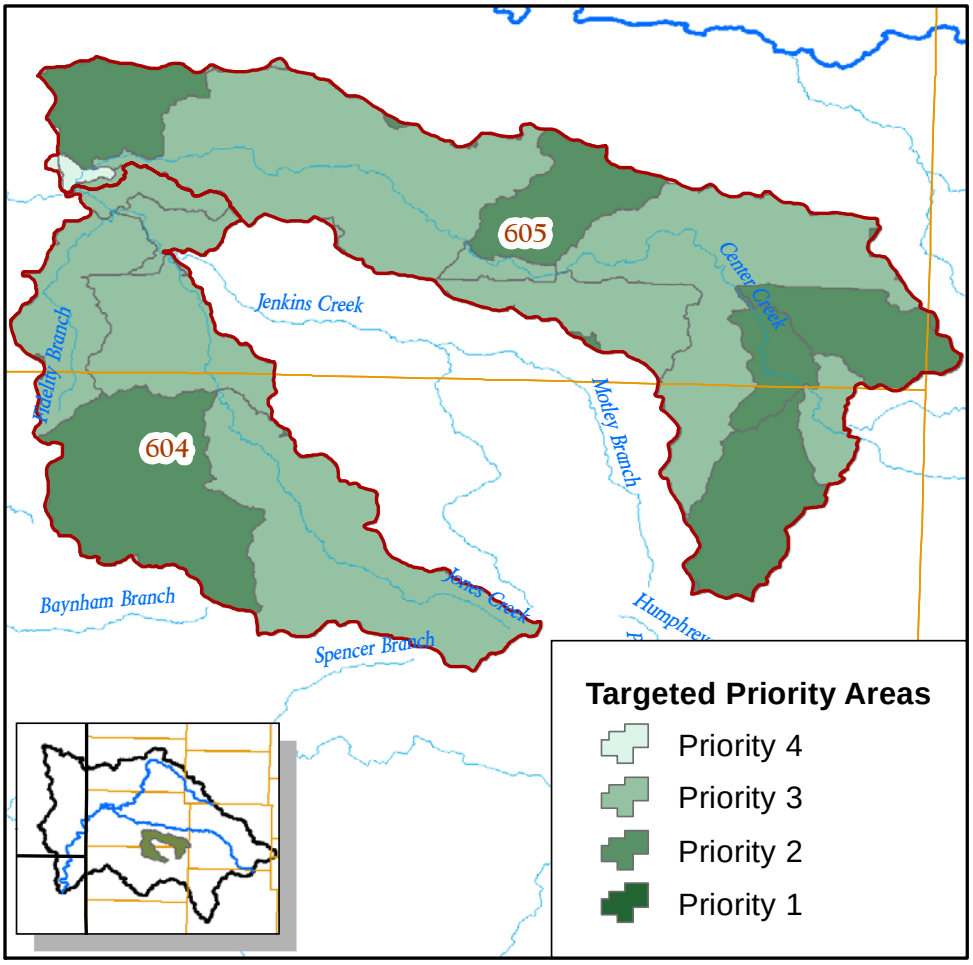

Figure 68. Targeted Priority Areas in the Jones Creek Sub Watershed.

2) Adoption Rates for BMPs by Pollutant Source

Table 187. Cropland BMP Adoption Rate the Jones Creek Sub Watershed.*

Jones Creek Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	18	18	18	18	18	18	18	18	146
2	18	18	18	18	18	18	18	18	146
3	18	18	18	18	18	18	18	18	146
4	18	18	18	18	18	18	18	18	146
5	18	18	18	18	18	18	18	18	146
6	18	18	18	18	18	18	18	18	146
7	18	18	18	18	18	18	18	18	146
8	18	18	18	18	18	18	18	18	146

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
9	18	18	18	18	18	18	18	18	146
10	18	18	18	18	18	18	18	18	146
11	18	18	18	18	18	18	18	18	146
12	18	18	18	18	18	18	18	18	146
13	18	18	18	18	18	18	18	18	146
14	18	18	18	18	18	18	18	18	146
15	18	18	18	18	18	18	18	18	146
16	18	18	18	18	18	18	18	18	146
17	18	18	18	18	18	18	18	18	146
18	18	18	18	18	18	18	18	18	146
19	18	18	18	18	18	18	18	18	146
20	18	18	18	18	18	18	18	18	146

***Cropland adoption rates by HUC 12 are provided in the Appendix.**

Table 188. Livestock BMP Adoption Rates in Jones Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Adoption (over 20 years)
15	15	3	5	1	3	3	**45**

Table 189. Urban BMP Adoption Rates in Jones Creek Sub Watershed.

Jones Creek Sub Watershed Urban BMP Adoption				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Total Adoption**
1	1			1
2		1		1
3			1	1
4				0
5				0
6	1			1
7		1		1
8			1	1
9				0
10				0
11	1			1
12				0
13		1		1
14			1	1

Year	Bioswale	Stream Buffers	Permanent Vegetation	Total Adoption
15				0
16	1			1
17		1		1
18			1	1
19				0
20				0

3) Pollutant Load Reduction

Table 190. Cropland Erosion Load Reduction in Jones Creek Sub Watershed.*

Jones Creek Annual Soil Erosion Reduction									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	6	1	2	2	3	2	4	4	23
2	11	1	4	4	6	4	7	7	46
3	17	2	6	6	9	7	11	11	68
4	22	3	7	7	12	9	15	15	91
5	28	4	9	9	15	11	19	19	114
6	34	4	11	11	18	13	22	22	137
7	39	5	13	13	21	16	26	26	159
8	45	6	15	15	24	18	30	30	182
9	50	7	17	17	27	20	34	34	205
10	56	7	19	19	30	22	37	37	228
11	62	8	21	21	33	25	41	41	250
12	67	9	22	22	36	27	45	45	273
13	73	10	24	24	39	29	49	49	296
14	78	10	26	26	42	31	52	52	319
15	84	11	28	28	45	34	56	56	341
16	90	12	30	30	48	36	60	60	364
17	95	13	32	32	51	38	63	63	387
18	101	13	34	34	54	40	67	67	410
19	106	14	35	35	57	43	71	71	432
20	112	15	37	37	60	45	75	75	455

***Cropland erosion load reductions by HUC 12 are provided in the Appendix.**

Table 191. Cropland Phosphorus Load Reduction in Jones Creek Sub Watershed.*

Jones Creek Annual Phosphorus Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	28	11	18	18	28	21	35	35	193
2	56	21	35	35	56	42	70	70	387
3	84	32	53	53	84	63	105	105	580
4	113	42	70	70	113	84	141	141	774
5	141	53	88	88	141	105	176	176	967
6	169	63	105	105	169	127	211	211	1,160
7	197	74	123	123	197	148	246	246	1,354
8	225	84	141	141	225	169	281	281	1,547
9	253	95	158	158	253	190	316	316	1,741
10	281	105	176	176	281	211	352	352	1,934
11	309	116	193	193	309	232	387	387	2,127
12	338	127	211	211	338	253	422	422	2,321
13	366	137	229	229	366	274	457	457	2,514
14	394	148	246	246	394	295	492	492	2,708
15	422	158	264	264	422	316	527	527	2,901
16	450	169	281	281	450	338	563	563	3,094
17	478	179	299	299	478	359	598	598	3,288
18	506	190	316	316	506	380	633	633	3,481
19	534	200	334	334	534	401	668	668	3,675
20	563	211	352	352	563	422	703	703	3,868

***Cropland phosphorus load reductions by HUC 12 are provided in the Appendix.**

Table 192. Cropland Nitrogen Load Reduction in Jones Creek Sub Watershed.*

Jones Creek Annual Nitrogen Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	46	28	46	46	73	55	46	92	432
2	92	55	92	92	147	110	92	184	863
3	138	83	138	138	220	165	138	276	1,295
4	184	110	184	184	294	220	184	367	1,727
5	230	138	230	230	367	276	230	459	2,158
6	276	165	276	276	441	331	276	551	2,590
7	321	193	321	321	514	386	321	643	3,022
8	367	220	367	367	588	441	367	735	3,453
9	413	248	413	413	661	496	413	827	3,885

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
10	459	276	459	459	735	551	459	918	4,317
11	505	303	505	505	808	606	505	1,010	4,748
12	551	331	551	551	882	661	551	1,102	5,180
13	597	358	597	597	955	716	597	1,194	5,612
14	643	386	643	643	1,029	771	643	1,286	6,043
15	689	413	689	689	1,102	827	689	1,378	6,475
16	735	441	735	735	1,176	882	735	1,469	6,906
17	781	468	781	781	1,249	937	781	1,561	7,338
18	827	496	827	827	1,323	992	827	1,653	7,770
19	872	523	872	872	1,396	1,047	872	1,745	8,201
20	918	551	918	918	1,469	1,102	918	1,837	8,633

***Cropland nitrogen load reductions by HUC 12 are provided in the Appendix.**

Table 193. Livestock Phosphorus Load Reduction in the Jones Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
1,575	7,125	1,425	1,900	888	370	1,332	**14,616**

Table 194. Livestock Nitrogen Load Reduction in the Jones Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
2,966	13,420	2,684	3,579	1,673	698	2,510	**27,529**

Table 195. Urban Erosion Load Reduction in the Jones Creek Sub Watershed.

Jones Creek Sub Watershed Urban BMP Sediment Reduction Rates (tons)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	1.03	0.00	0.00	1.03
2	1.03	1.54	0.00	2.56
3	1.03	1.54	0.10	2.67
4	1.03	1.54	0.10	2.67
5	1.03	1.54	0.10	2.67
6	2.05	1.54	0.10	3.69
7	2.05	3.08	0.10	5.23
8	2.05	3.08	0.21	5.33
9	2.05	3.08	0.21	5.33
10	2.05	3.08	0.21	5.33

Year	Bioswale	Stream Buffers	Permanent Vegetation	Cumulative Load Reduction
11	3.08	3.08	0.21	6.36
12	3.08	3.08	0.21	6.36
13	3.08	4.61	0.21	7.89
14	3.08	4.61	0.31	8.00
15	3.08	4.61	0.31	8.00
16	4.10	4.61	0.31	9.02
17	4.10	6.15	0.31	10.56
18	4.10	6.15	0.41	10.66
19	4.10	6.15	0.41	10.66
20	4.10	6.15	0.41	10.66

Table 196. Urban Phosphorus Load Reduction in the Jones Creek Sub Watershed.

Jones Creek Sub Watershed Urban BMP Phosphorus Reduction Rates (pounds)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	7.5	0	0	8
2	7.5	11.25	0	19
3	7.5	11.25	1.425	20
4	7.5	11.25	1.425	20
5	7.5	11.25	1.425	20
6	15	11.25	1.425	28
7	15	22.5	1.425	39
8	15	22.5	2.85	40
9	15	22.5	2.85	40
10	15	22.5	2.85	40
11	22.5	22.5	2.85	48
12	22.5	22.5	2.85	48
13	22.5	33.75	2.85	59
14	22.5	33.75	4.275	61
15	22.5	33.75	4.275	61
16	30	33.75	4.275	68
17	30	45	4.275	79
18	30	45	5.7	81
19	30	45	5.7	81
20	30	45	5.7	81

Table 197. Urban Nitrogen Load Reduction in the Jones Creek Sub Watershed.

Jones Creek Urban BMP Nitrogen Reduction Rates (pounds)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	58.5	0	0	59
2	58.5	87.75	0	146

Year	Bioswale	Stream Buffers	Permanent Vegetation	Cumulative Load Reduction
3	58.5	87.75	11.115	157
4	58.5	87.75	11.115	157
5	58.5	87.75	11.115	157
6	117	87.75	11.115	216
7	117	175.5	11.115	304
8	117	175.5	22.23	315
9	117	175.5	22.23	315
10	117	175.5	22.23	315
11	175.5	175.5	22.23	373
12	175.5	175.5	22.23	373
13	175.5	263.25	22.23	461
14	175.5	263.25	33.345	472
15	175.5	263.25	33.345	472
16	234	263.25	33.345	531
17	234	351	33.345	618
18	234	351	44.46	629
19	234	351	44.46	629
20	234	351	44.46	629

4) Costs of Implementing BMPs

Table 198. Cropland BMP Costs in the Jones Creek Sub Watershed.*

Jones Creek Total Annual Cost of Cropland BMPs, 3% Inflation									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	$1,420	$713	$1,426	$713	$2,924	$2,285	$1,218	$2,285	$12,982
2	$1,462	$734	$1,468	$734	$3,012	$2,353	$1,255	$2,353	$13,372
3	$1,506	$756	$1,512	$756	$3,102	$2,424	$1,293	$2,424	$13,773
4	$1,552	$779	$1,558	$779	$3,195	$2,496	$1,331	$2,496	$14,186
5	$1,598	$802	$1,604	$802	$3,291	$2,571	$1,371	$2,571	$14,612
6	$1,646	$826	$1,653	$826	$3,390	$2,648	$1,412	$2,648	$15,050
7	$1,695	$851	$1,702	$851	$3,492	$2,728	$1,455	$2,728	$15,502
8	$1,746	$877	$1,753	$877	$3,596	$2,810	$1,498	$2,810	$15,967
9	$1,799	$903	$1,806	$903	$3,704	$2,894	$1,543	$2,894	$16,446
10	$1,853	$930	$1,860	$930	$3,815	$2,981	$1,590	$2,981	$16,939
11	$1,908	$958	$1,916	$958	$3,930	$3,070	$1,637	$3,070	$17,447
12	$1,965	$987	$1,973	$987	$4,048	$3,162	$1,687	$3,162	$17,971
13	$2,024	$1,016	$2,032	$1,016	$4,169	$3,257	$1,737	$3,257	$18,510

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
14	$2,085	$1,047	$2,093	$1,047	$4,294	$3,355	$1,789	$3,355	$19,065
15	$2,148	$1,078	$2,156	$1,078	$4,423	$3,456	$1,843	$3,456	$19,637
16	$2,212	$1,110	$2,221	$1,110	$4,556	$3,559	$1,898	$3,559	$20,226
17	$2,278	$1,144	$2,288	$1,144	$4,692	$3,666	$1,955	$3,666	$20,833
18	$2,347	$1,178	$2,356	$1,178	$4,833	$3,776	$2,014	$3,776	$21,458
19	$2,417	$1,213	$2,427	$1,213	$4,978	$3,889	$2,074	$3,889	$22,102
20	$2,490	$1,250	$2,500	$1,250	$5,128	$4,006	$2,136	$4,006	$22,765

***Costs by HUC 12 are provided in the Appendix.**

Table 199. Livestock BMP Costs in the Jones Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Cost (over 20 years)
$60,000	$105,000	$9,000	$10,000	$12,000	$22,500	$3,000	**$221,500**

Table 200. Urban BMP Costs in the Jones Creek Sub Watershed.

Jones Creek Sub Watershed Urban BMP Implementation Cost				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cost**
1	$21,780	$0	$0	$21,780
2	$0	$1,000	$0	$1,000
3	$0	$0	$150	$150
4	$0	$0	$0	$0
5	$0	$0	$0	$0
6	$21,780	$0	$0	$21,780
7	$0	$1,000	$0	$1,000
8	$0	$0	$150	$150
9	$0	$0	$0	$0
10	$0	$0	$0	$0
11	$21,780	$0	$0	$21,780
12	$0	$0	$0	$0
13	$0	$1,000	$0	$1,000
14	$0	$0	$150	$150
15	$0	$0	$0	$0
16	$21,780	$0	$0	$21,780
17	$0	$1,000	$0	$1,000
18	$0	$0	$150	$150
19	$0	$0	$0	$0

Year	Bioswale	Stream Buffers	Permanent Vegetation	Cost
20	$0	$0	$0	$0

5) Totals by Category

Table 201. Jones Creek Sub Watershed Total Phosphorus Load Reduction by Category.

Jones Creek Total Phosphorus Reduction over the 20 Year Life of the Plan		
Best Management Practice Category	Total Phosphorus Reduction, pounds	% of Total Reduction
Cropland	3,868	20.9%
Livestock	14,616	78.7%
Urban	81	0.4%
Total	**18,565**	**100.0%**

Table 202. Jones Creek Sub Watershed Total Cost by Category.

Jones Creek Total Cost over the 20 Year Life of the Plan		
Best Management Practice Category	Total Cost	% of Total Cost
Cropland	$348,844	52.7%
Livestock	$221,500	33.4%
Urban	$91,720	13.9%
Total	**$662,064**	**100.0%**

L Baynham Branch

The Baynham Branch Sub Watersheds has an impairment for bacteria. Therefore, it will be targeted for livestock BMPs to address the needed bacteria TMDL. Cropland BMPs will also be addressed. Urban BMPs will not apply to this watershed due to a lack of urban areas.

Since phosphorus is tied to manure, it has been calculated that the phosphorus load reduction for control of bacteria in this sub watershed is 5,057 pounds of phosphorus over the 20 year life of the plan. If all livestock BMPs are implemented in this watershed, 275 pounds of phosphorus will be reduced annually. In addition to the phosphorus reduction that is connected to bacteria contribution, phosphorus from cropland BMPs will contribute 210 pounds. **This load reduction will be attained if all BMPs are implemented in the watershed.**

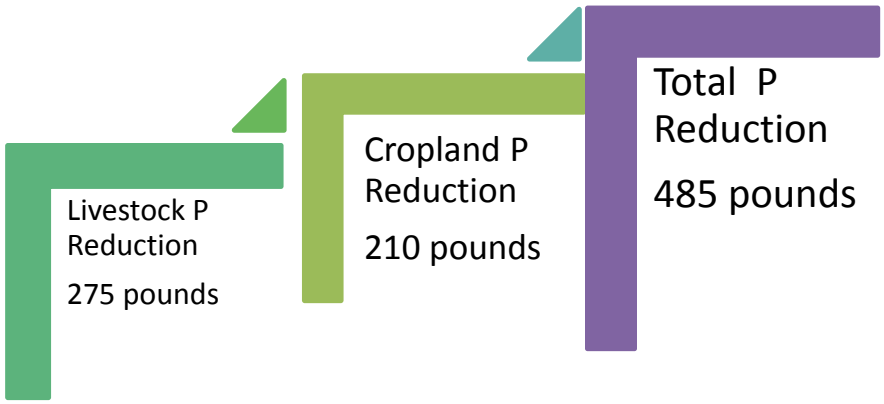

Figure 69. Annual Phosphorus Reduction by Category in Baynham Branch Sub Watershed after All BMPs have been Implemented.

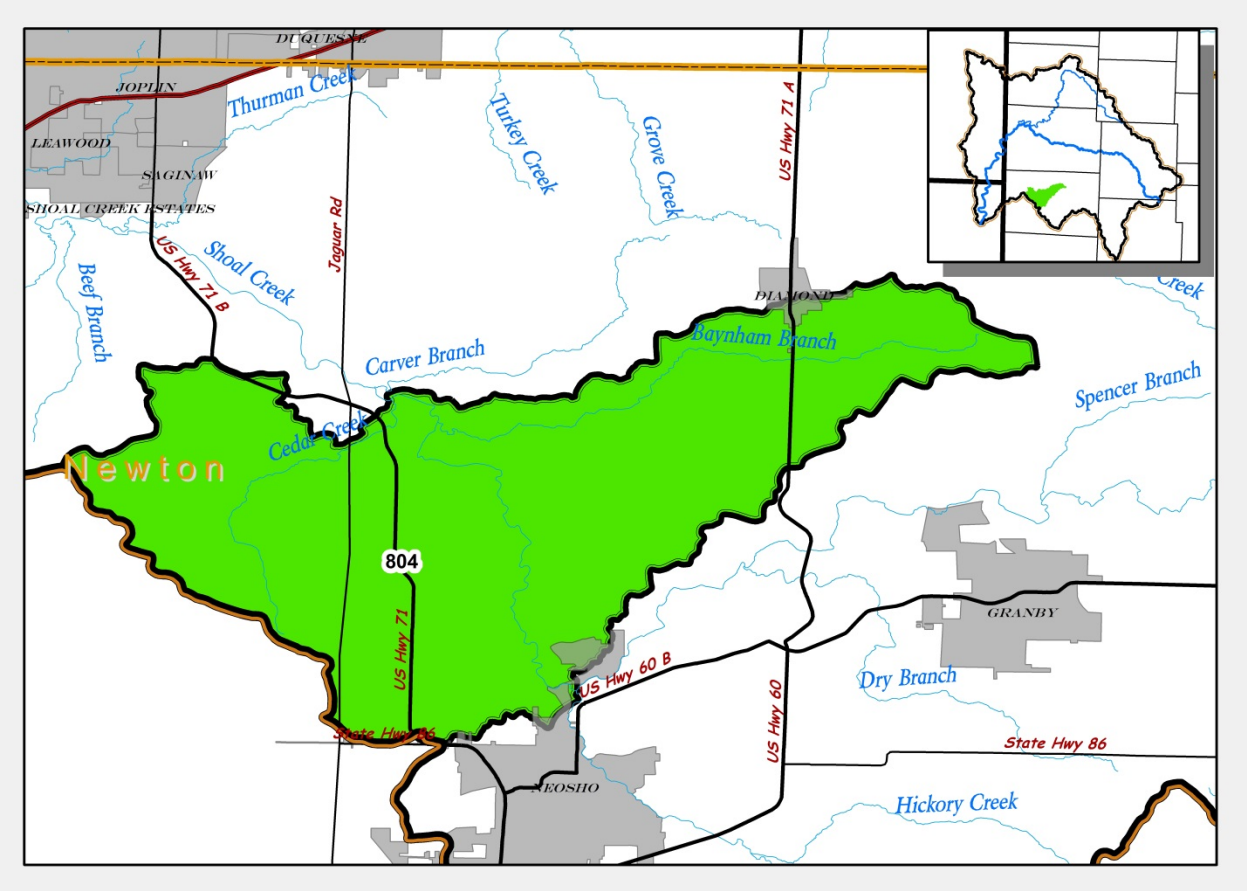

Figure 70. Baynham Branch Sub Watershed.

Table 203. SWAT Generated Land Use in the Baynham Branch Sub Watershed.

Land Use	Acres	Percentage of Land Use
Cropland	544	2%
Hay and Pasture	16,580	52%
Urban	1,871	6%
Woodland	12,656	40%
Water	56	0%
Total	31,706	100%

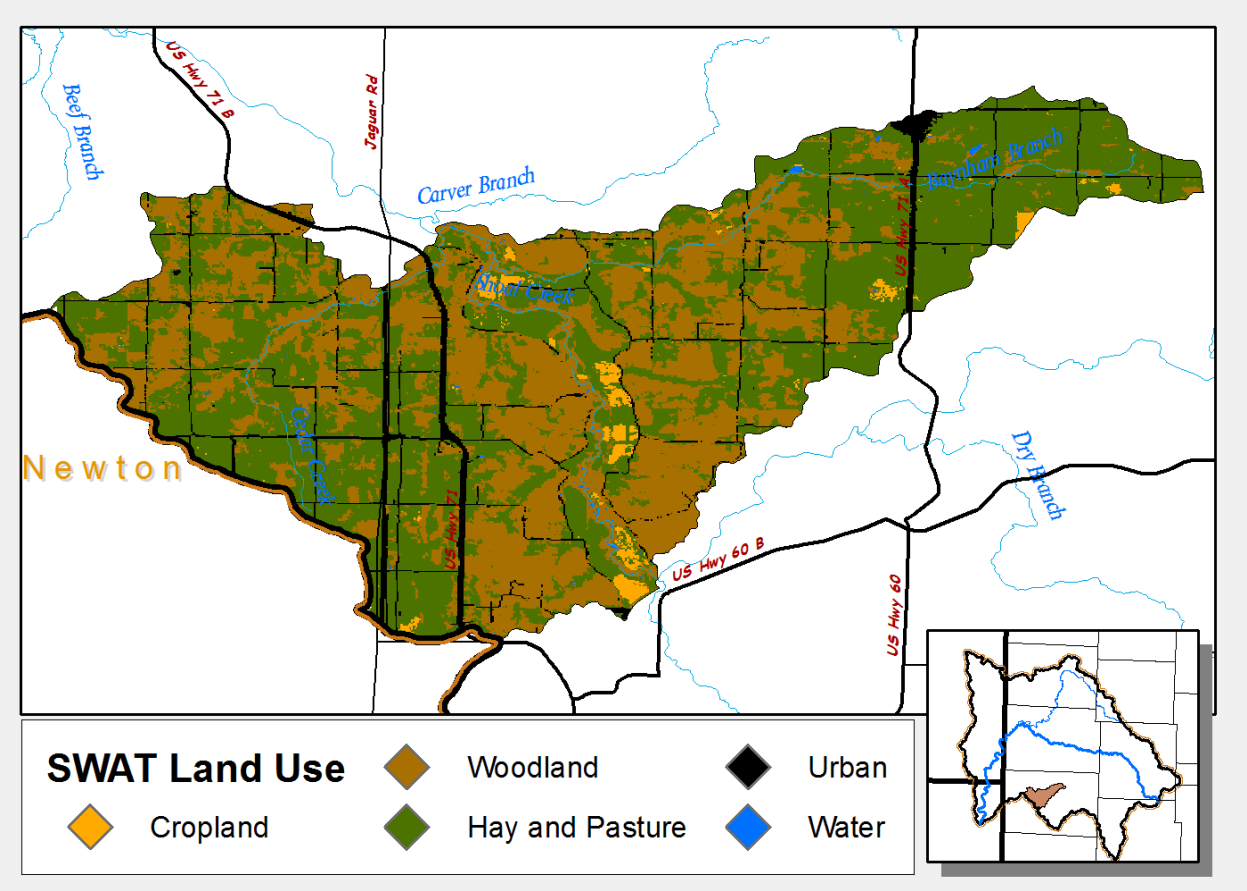

Figure 71. SWAT Generated Land Use in the Baynham Branch Sub Watershed.

1) Targeted Priority Areas

There are no Priority 1 Targeted Areas in the Baynham Branch Sub Watershed. Therefore, all cropland and livestock BMPs will be targeted in the Priority 2 areas shown in the medium green in the map below.

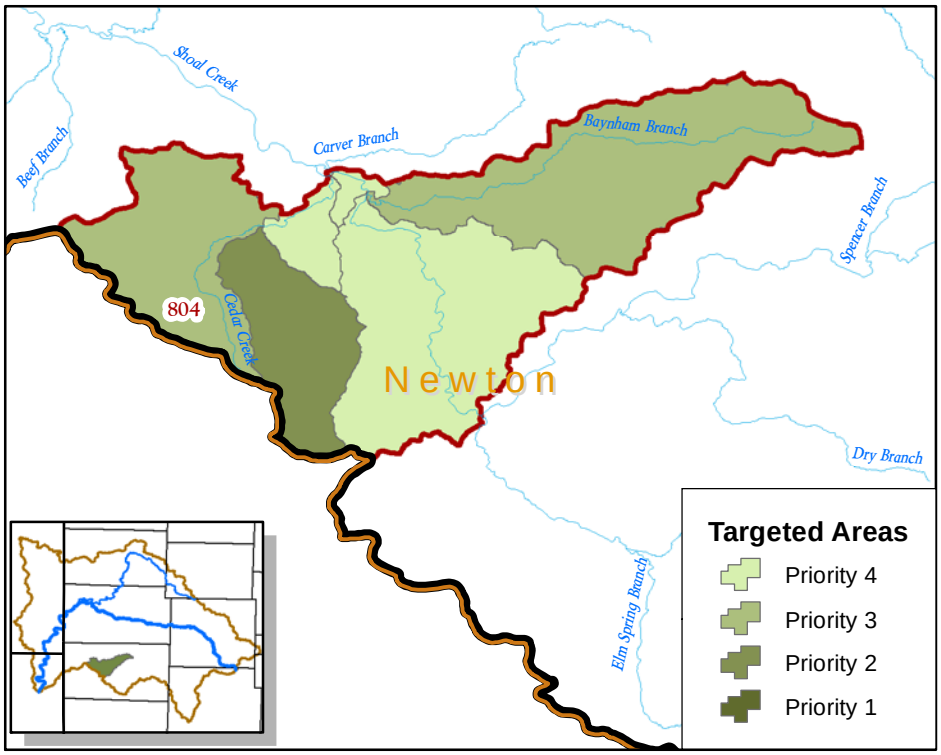

Figure 72. Targeted Priority Areas in the Baynham Branch Sub Watershed.

2) Adoption Rates for BMPs by Pollutant Source

Table 204. Cropland BMP Adoption Rates in Baynham Branch Sub Watershed.*

Sub Watershed #804 Baynham Branch Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	25	25	25	25	25	25	25	25	201
2	25	25	25	25	25	25	25	25	201
3	25	25	25	25	25	25	25	25	201
4	25	25	25	25	25	25	25	25	201
5	25	25	25	25	25	25	25	25	201
6	25	25	25	25	25	25	25	25	201
7	25	25	25	25	25	25	25	25	201
8	25	25	25	25	25	25	25	25	201
9	25	25	25	25	25	25	25	25	201
10	25	25	25	25	25	25	25	25	201
11	25	25	25	25	25	25	25	25	201
12	25	25	25	25	25	25	25	25	201
13	25	25	25	25	25	25	25	25	201
14	25	25	25	25	25	25	25	25	201

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
15	25	25	25	25	25	25	25	25	201
16	25	25	25	25	25	25	25	25	201
17	25	25	25	25	25	25	25	25	201
18	25	25	25	25	25	25	25	25	201
19	25	25	25	25	25	25	25	25	201
20	25	25	25	25	25	25	25	25	201

***Cropland adoption rates by HUC 12 are provided in the Appendix.**

Table 205. Livestock Adoption Rates in Baynham Branch Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Adoption (over 20 years)
5	4	3	2	1	0	0	**15**

3) Pollutant Load Reductions

Table 206. Cropland Erosion Load Reduction in Baynham Branch Sub Watershed.*

Sub Watershed #804 Baynham Branch Annual Soil Erosion Reduction									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	5	1	2	2	2	2	3	3	18
2	9	1	3	3	5	4	6	6	37
3	14	2	5	5	7	5	9	9	55
4	18	2	6	6	10	7	12	12	73
5	23	3	8	8	12	9	15	15	92
6	27	4	9	9	14	11	18	18	110
7	32	4	11	11	17	13	21	21	128
8	36	5	12	12	19	14	24	24	147
9	41	5	14	14	22	16	27	27	165
10	45	6	15	15	24	18	30	30	184
11	50	7	17	17	26	20	33	33	202
12	54	7	18	18	29	22	36	36	220
13	59	8	20	20	31	23	39	39	239
14	63	8	21	21	34	25	42	42	257
15	68	9	23	23	36	27	45	45	275
16	72	10	24	24	39	29	48	48	294

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
17	77	10	26	26	41	31	51	51	312
18	81	11	27	27	43	32	54	54	330
19	86	11	29	29	46	34	57	57	349
20	90	12	30	30	48	36	60	60	367

***Erosion load reductions by HUC 12 are provided in the Appendix.**

Table 207. Cropland Phosphorus Load Reduction in Baynham Branch Sub Watershed.*

Sub Watershed #804 Baynham Branch Annual Phosphorus Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	31	11	19	19	31	23	38	38	210
2	61	23	38	38	61	46	76	76	420
3	92	34	57	57	92	69	115	115	630
4	122	46	76	76	122	92	153	153	840
5	153	57	96	96	153	115	191	191	1,051
6	183	69	115	115	183	138	229	229	1,261
7	214	80	134	134	214	160	267	267	1,471
8	245	92	153	153	245	183	306	306	1,681
9	275	103	172	172	275	206	344	344	1,891
10	306	115	191	191	306	229	382	382	2,101
11	336	126	210	210	336	252	420	420	2,311
12	367	138	229	229	367	275	458	458	2,521
13	397	149	248	248	397	298	497	497	2,732
14	428	160	267	267	428	321	535	535	2,942
15	458	172	287	287	458	344	573	573	3,152
16	489	183	306	306	489	367	611	611	3,362
17	520	195	325	325	520	390	649	649	3,572
18	550	206	344	344	550	413	688	688	3,782
19	581	218	363	363	581	436	726	726	3,992
20	611	229	382	382	611	458	764	764	4,202

***Phosphorus load reductions by HUC 12 are provided in the Appendix.**

Table 208. Cropland Nitrogen Load Reduction in Baynham Branch Sub Watershed.

Sub Watershed #804 Baynham Branch Annual Nitrogen Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	49	29	49	49	78	58	49	97	457

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
2	97	58	97	97	156	117	97	195	915
3	146	88	146	146	233	175	146	292	1,372
4	195	117	195	195	311	233	195	389	1,829
5	243	146	243	243	389	292	243	486	2,286
6	292	175	292	292	467	350	292	584	2,744
7	341	204	341	341	545	409	341	681	3,201
8	389	233	389	389	623	467	389	778	3,658
9	438	263	438	438	700	525	438	876	4,115
10	486	292	486	486	778	584	486	973	4,573
11	535	321	535	535	856	642	535	1,070	5,030
12	584	350	584	584	934	700	584	1,167	5,487
13	632	379	632	632	1,012	759	632	1,265	5,944
14	681	409	681	681	1,090	817	681	1,362	6,402
15	730	438	730	730	1,167	876	730	1,459	6,859
16	778	467	778	778	1,245	934	778	1,557	7,316
17	827	496	827	827	1,323	992	827	1,654	7,774
18	876	525	876	876	1,401	1,051	876	1,751	8,231
19	924	555	924	924	1,479	1,109	924	1,849	8,688
20	973	584	973	973	1,557	1,167	973	1,946	9,145

Table 209. Livestock Phosphorus Load Reduction in the Baynham Branch Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
525	1,900	1,425	760	888	0	0	**5,498**

Table 210. Livestock Nitrogen Load Reduction in Baynham Branch Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
989	3,579	2,684	1,431	1,673	0	0	**10,356**

4) Costs of Implementing BMPs

Table 211. Cropland BMP Costs in the Baynham Branch Sub Watershed.

Sub Watershed #804 Baynhm Creek Total Annual Cost of Cropland BMPs, 3% Inflation									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	$1,951	$979	$1,959	$979	$4,018	$3,139	$1,674	$3,139	$17,840
2	$2,010	$1,009	$2,018	$1,009	$4,139	$3,234	$1,725	$3,234	$18,376
3	$2,070	$1,039	$2,078	$1,039	$4,263	$3,331	$1,776	$3,331	$18,927
4	$2,132	$1,070	$2,141	$1,070	$4,391	$3,430	$1,830	$3,430	$19,495
5	$2,196	$1,102	$2,205	$1,102	$4,523	$3,533	$1,884	$3,533	$20,080
6	$2,262	$1,135	$2,271	$1,135	$4,658	$3,639	$1,941	$3,639	$20,682
7	$2,330	$1,170	$2,339	$1,170	$4,798	$3,749	$1,999	$3,749	$21,302
8	$2,400	$1,205	$2,409	$1,205	$4,942	$3,861	$2,059	$3,861	$21,942
9	$2,472	$1,241	$2,482	$1,241	$5,090	$3,977	$2,121	$3,977	$22,600
10	$2,546	$1,278	$2,556	$1,278	$5,243	$4,096	$2,185	$4,096	$23,278
11	$2,622	$1,316	$2,633	$1,316	$5,400	$4,219	$2,250	$4,219	$23,976
12	$2,701	$1,356	$2,712	$1,356	$5,562	$4,346	$2,318	$4,346	$24,695
13	$2,782	$1,396	$2,793	$1,396	$5,729	$4,476	$2,387	$4,476	$25,436
14	$2,865	$1,438	$2,877	$1,438	$5,901	$4,610	$2,459	$4,610	$26,199
15	$2,951	$1,482	$2,963	$1,482	$6,078	$4,749	$2,533	$4,749	$26,985
16	$3,040	$1,526	$3,052	$1,526	$6,260	$4,891	$2,609	$4,891	$27,795
17	$3,131	$1,572	$3,144	$1,572	$6,448	$5,038	$2,687	$5,038	$28,629
18	$3,225	$1,619	$3,238	$1,619	$6,642	$5,189	$2,767	$5,189	$29,488
19	$3,322	$1,667	$3,335	$1,667	$6,841	$5,345	$2,850	$5,345	$30,372
20	$3,421	$1,718	$3,435	$1,718	$7,046	$5,505	$2,936	$5,505	$31,283

Table 212. Livestock BMP Costs in the Baynham Branch Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Cost (over 20 years)
$20,000	$28,000	$9,000	$4,000	$12,000	$0	$0	**$73,000**

5) Totals by Category

Table 213. Baynham Branch Sub Watershed Total Phosphorus Load Reduction by Category.

Baynham Branch Total Phosphorus Reduction over the 20 Year Life of the Plan		
Best Management Practice Category	Total Phosphorus Reduction, pounds	% of Total Reduction
Cropland	4,202	43%
Livestock	5,498	57%
Total	**9,700**	**100%**

Table 214. Baynham Branch Sub Watershed Total Cost by Category.

Baynham Branch Total Cost over the 20 Year Life of the Plan		
Best Management Practice Category	Total Cost	% of Total Cost
Cropland	$479,380	87%
Livestock	$73,000	13%
Total	**$552,380**	**100%**

M Capps Creek

The Capps Creek Sub Watershed has an impairment for bacteria. Therefore, it will be targeted for livestock BMPs to address the needed bacteria TMDL. Cropland BMPs will also be addressed. Urban BMPs will apply to this watershed to be implemented in any urban area.

Since phosphorus is tied to manure, it has been calculated that the phosphorus load reduction for control of bacteria in this sub watershed is 5,050 pounds of phosphorus over the 20 year life of the plan. If all livestock BMPs are implemented in this watershed, 275 pounds of phosphorus will be reduced annually. In addition to the phosphorus reduction that is connected to bacteria contribution, phosphorus from cropland BMPs and urban BMPs will contribute 313 pounds. **This load reduction will be attained if all BMPs are implemented in the watershed.**

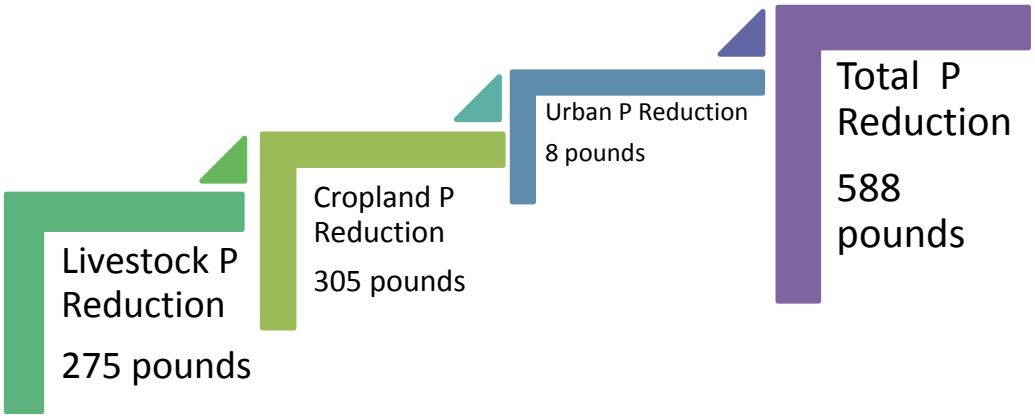

Figure 73. Annual Phosphorus Reduction by Category in Capps Creek Sub Watershed after All BMPs have been Implemented.

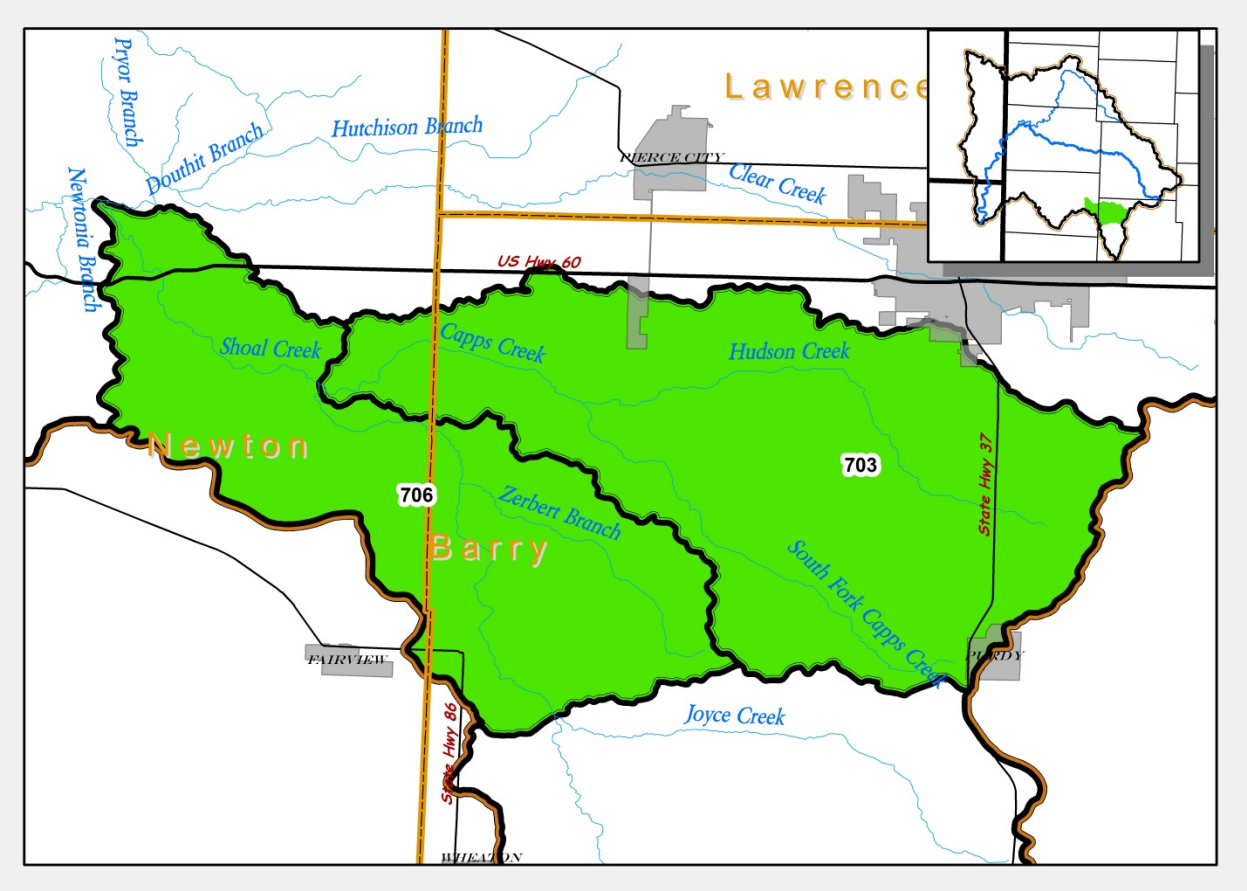

Figure 74. Capps Creek Sub Watershed.

Table 215. SWAT Generated Land Use in Capps Creek Sub Watershed.

Land Use	Acres	Percentage of Land Use
Cropland	4,612	9%
Hay and Pasture	32,073	63%
Urban	2,648	5%
Woodland	11,346	22%
Water	36	0%
Total	50,715	100%

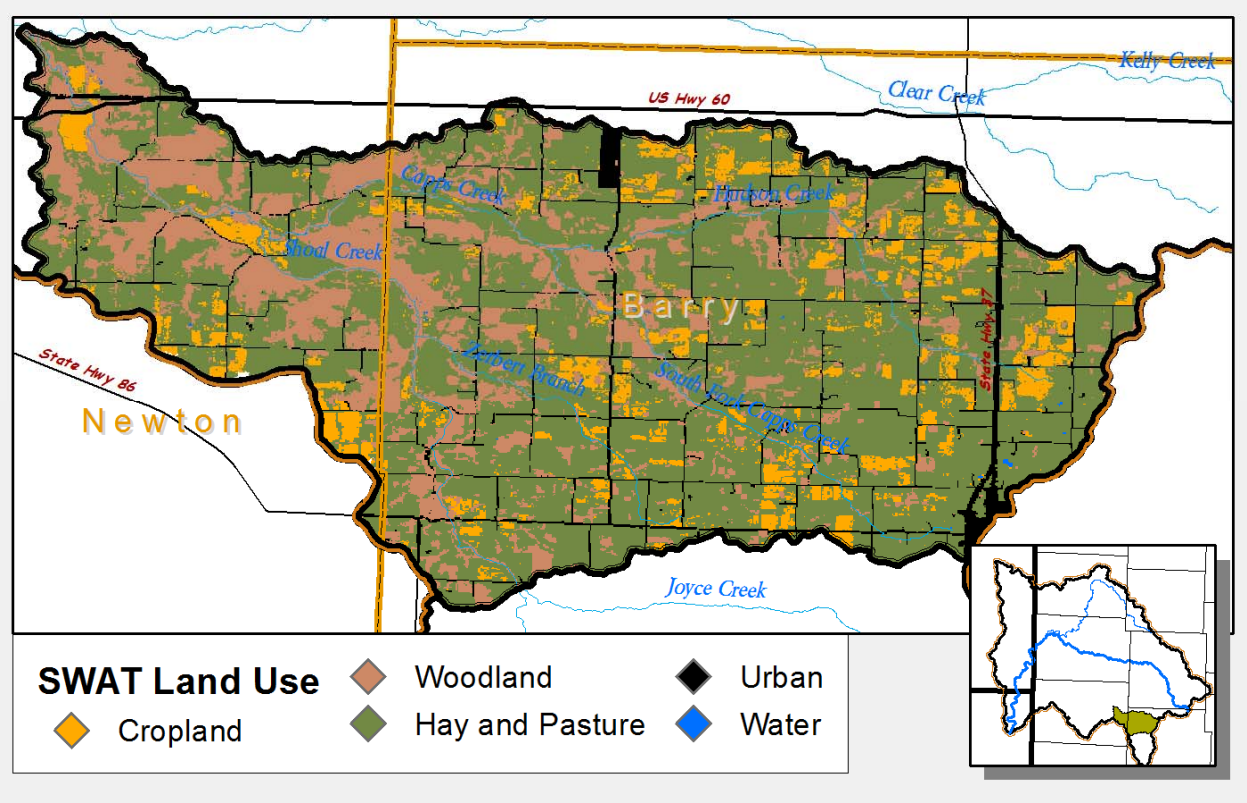

Figure 75. SWAT Generated Land Use in the Capps Creek Sub Watershed.

1) Targeted Priority Areas

The Priority 1 Targeted catchment areas are in both HUC 12s (703 and 706) of the Capps Creek Sub Watershed as seen in the dark green color in the map below. Therefore, all cropland and livestock BMPs will by targeted in these Priority Areas. Urban BMPs will be placed in any urban area of the sub watershed.

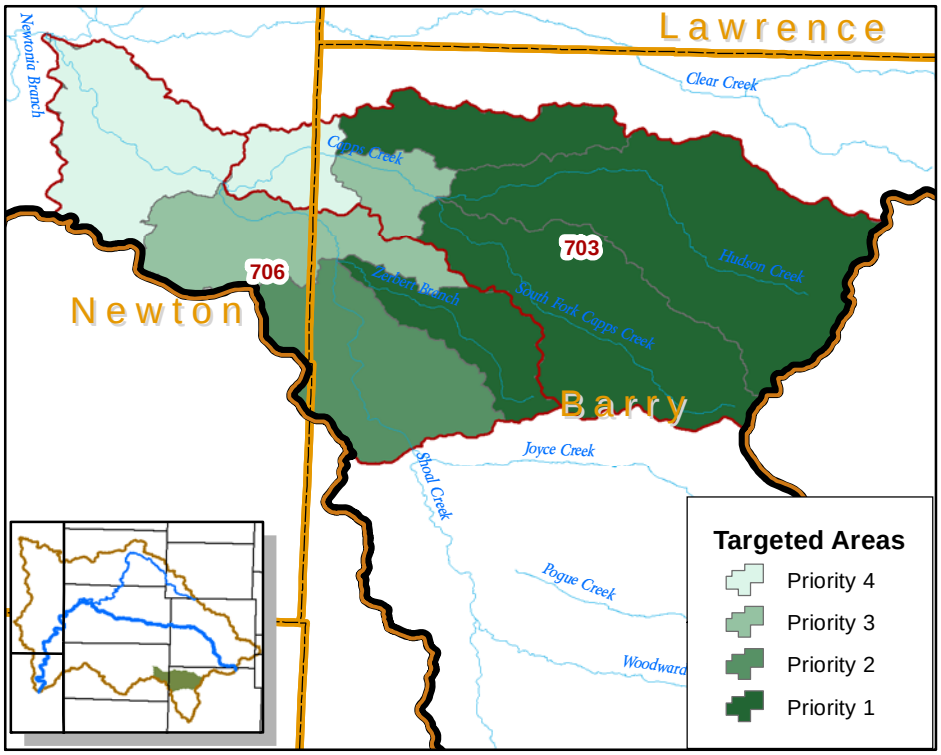

Figure 76. Targeted Priority Areas in the Capps Creek Sub Watershed.

2) Adoption Rates for BMPs by Pollutant Source

Table 216. Cropland BMP Adoption Rates in Capps Creek Sub Watershed.

Sub Watershed #703 Capps Creek Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	21	21	21	21	21	21	21	21	167
2	21	21	21	21	21	21	21	21	167
3	21	21	21	21	21	21	21	21	167
4	21	21	21	21	21	21	21	21	167
5	21	21	21	21	21	21	21	21	167
6	21	21	21	21	21	21	21	21	167
7	21	21	21	21	21	21	21	21	167
8	21	21	21	21	21	21	21	21	167
9	21	21	21	21	21	21	21	21	167
10	21	21	21	21	21	21	21	21	167
11	21	21	21	21	21	21	21	21	167
12	21	21	21	21	21	21	21	21	167
13	21	21	21	21	21	21	21	21	167
14	21	21	21	21	21	21	21	21	167

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
15	21	21	21	21	21	21	21	21	167
16	21	21	21	21	21	21	21	21	167
17	21	21	21	21	21	21	21	21	167
18	21	21	21	21	21	21	21	21	167
19	21	21	21	21	21	21	21	21	167
20	21	21	21	21	21	21	21	21	167

Table 217. Livestock Adoption Rates in Capps Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Adoption (over 20 years)
5	4	3	2	1	0	0	**15**

Table 218. Urban BMP Adoption Rates in Capps Creek Sub Watershed.

Capps Creek Urban BMP Adoption				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Total Adoption**
1	1			1
2		1		1
3			1	1
4				0
5				0
6	1			1
7		1		1
8			1	1
9				0
10				0
11	1			1
12				0
13		1		1
14			1	1
15				0
16	1			1
17		1		1
18			1	1
19				0
20				0

3) Pollutant Load Reductions

Table 219. Cropland Erosion Load Reduction in Capps Creek Sub Watershed.*

Sub Watershed #703 Capps Creek Annual Soil Erosion Reduction									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	20	3	7	7	10	8	13	13	80
2	39	5	13	13	21	16	26	26	160
3	59	8	20	20	31	24	39	39	240
4	79	10	26	26	42	31	52	52	320
5	98	13	33	33	52	39	65	65	400
6	118	16	39	39	63	47	79	79	479
7	138	18	46	46	73	55	92	92	559
8	157	21	52	52	84	63	105	105	639
9	177	24	59	59	94	71	118	118	719
10	196	26	65	65	105	79	131	131	799
11	216	29	72	72	115	86	144	144	879
12	236	31	79	79	126	94	157	157	959
13	255	34	85	85	136	102	170	170	1,039
14	275	37	92	92	147	110	183	183	1,119
15	295	39	98	98	157	118	196	196	1,199
16	314	42	105	105	168	126	210	210	1,279
17	334	45	111	111	178	134	223	223	1,358
18	354	47	118	118	189	141	236	236	1,438
19	373	50	124	124	199	149	249	249	1,518
20	393	52	131	131	210	157	262	262	1,598

***Cropland erosion load reductions by HUC 12 are provided in the Appendix.**

Table 220. Cropland Phosphorus Load Reduction in the Capps Creek Sub Watershed.*

Sub Watershed #703 Capps Creek Annual Phosphorus Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	44	17	28	28	44	33	55	55	305
2	89	33	55	55	89	67	111	111	610
3	133	50	83	83	133	100	166	166	914
4	177	67	111	111	177	133	222	222	1,219
5	222	83	139	139	222	166	277	277	1,524
6	266	100	166	166	266	200	333	333	1,829
7	310	116	194	194	310	233	388	388	2,134
8	355	133	222	222	355	266	443	443	2,438

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
9	399	150	249	249	399	299	499	499	2,743
10	443	166	277	277	443	333	554	554	3,048
11	488	183	305	305	488	366	610	610	3,353
12	532	200	333	333	532	399	665	665	3,658
13	576	216	360	360	576	432	720	720	3,962
14	621	233	388	388	621	466	776	776	4,267
15	665	249	416	416	665	499	831	831	4,572
16	709	266	443	443	709	532	887	887	4,877
17	754	283	471	471	754	565	942	942	5,182
18	798	299	499	499	798	599	998	998	5,486
19	842	316	526	526	842	632	1,053	1,053	5,791
20	887	333	554	554	887	665	1,108	1,108	6,096

***Cropland phosphorus load reductions by HUC 12 are provided in the Appendix.**

Table 221. Cropland Nitrogen Load Reduction in the Capps Creek Sub Watershed.*

Sub Watershed #703 Capps Creek Annual Nitrogen Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	78	47	78	78	125	93	78	156	732
2	156	93	156	156	249	187	156	312	1,464
3	234	140	234	234	374	280	234	467	2,196
4	312	187	312	312	498	374	312	623	2,928
5	389	234	389	389	623	467	389	779	3,660
6	467	280	467	467	748	561	467	935	4,393
7	545	327	545	545	872	654	545	1,090	5,125
8	623	374	623	623	997	748	623	1,246	5,857
9	701	421	701	701	1,122	841	701	1,402	6,589
10	779	467	779	779	1,246	935	779	1,558	7,321
11	857	514	857	857	1,371	1,028	857	1,713	8,053
12	935	561	935	935	1,495	1,122	935	1,869	8,785
13	1,012	607	1,012	1,012	1,620	1,215	1,012	2,025	9,517
14	1,090	654	1,090	1,090	1,745	1,308	1,090	2,181	10,249
15	1,168	701	1,168	1,168	1,869	1,402	1,168	2,336	10,981
16	1,246	748	1,246	1,246	1,994	1,495	1,246	2,492	11,713
17	1,324	794	1,324	1,324	2,118	1,589	1,324	2,648	12,446
18	1,402	841	1,402	1,402	2,243	1,682	1,402	2,804	13,178
19	1,480	888	1,480	1,480	2,368	1,776	1,480	2,960	13,910

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
20	1,558	935	1,558	1,558	2,492	1,869	1,558	3,115	14,642

***Cropland nitrogen load reductions by HUC 12 are provided in the Appendix.**

Table 222. Livestock Phosphorus Load Reduction in Capps Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
525	1,900	1,425	760	888	0	0	**5,498**

Table 223. Livestock Nitrogen Load Reduction in Capps Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
989	3,579	2,684	1,431	1,673	0	0	**10,356**

Table 224. Urban Erosion Load Reduction in the Capps Creek Sub Watershed.

Capps Creek Urban BMP Sediment Reduction Rates (tons)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	1.03	0.00	0.00	1.03
2	1.03	1.54	0.00	2.56
3	1.03	1.54	0.10	2.67
4	1.03	1.54	0.10	2.67
5	1.03	1.54	0.10	2.67
6	2.05	1.54	0.10	3.69
7	2.05	3.08	0.10	5.23
8	2.05	3.08	0.21	5.33
9	2.05	3.08	0.21	5.33
10	2.05	3.08	0.21	5.33
11	3.08	3.08	0.21	6.36
12	3.08	3.08	0.21	6.36
13	3.08	4.61	0.21	7.89
14	3.08	4.61	0.31	8.00
15	3.08	4.61	0.31	8.00
16	4.10	4.61	0.31	9.02
17	4.10	6.15	0.31	10.56
18	4.10	6.15	0.41	10.66
19	4.10	6.15	0.41	10.66
20	4.10	6.15	0.41	10.66

Table 225. Urban Phosphorus Load Reduction in the Capps Creek Sub Watershed.

Capps Creek Urban BMP Phosphorus Reduction Rates (pounds)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	7.5	0	0	8
2	7.5	11.25	0	19
3	7.5	11.25	1.425	20
4	7.5	11.25	1.425	20
5	7.5	11.25	1.425	20
6	15	11.25	1.425	28
7	15	22.5	1.425	39
8	15	22.5	2.85	40
9	15	22.5	2.85	40
10	15	22.5	2.85	40
11	22.5	22.5	2.85	48
12	22.5	22.5	2.85	48
13	22.5	33.75	2.85	59
14	22.5	33.75	4.275	61
15	22.5	33.75	4.275	61
16	30	33.75	4.275	68
17	30	45	4.275	79
18	30	45	5.7	81
19	30	45	5.7	81
20	30	45	5.7	81

Table 226. Urban Nitrogen Load Reduction in the Capps Creek Sub Watershed.

Capps Creek Urban BMP Nitrogen Reduction Rates (pounds)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	58.5	0	0	59
2	58.5	87.75	0	146
3	58.5	87.75	11.115	157
4	58.5	87.75	11.115	157
5	58.5	87.75	11.115	157
6	117	87.75	11.115	216
7	117	175.5	11.115	304
8	117	175.5	22.23	315
9	117	175.5	22.23	315
10	117	175.5	22.23	315
11	175.5	175.5	22.23	373
12	175.5	175.5	22.23	373
13	175.5	263.25	22.23	461

Year	Bioswale	Stream Buffers	Permanent Vegetation	Cumulative Load Reduction
14	175.5	263.25	33.345	472
15	175.5	263.25	33.345	472
16	234	263.25	33.345	531
17	234	351	33.345	618
18	234	351	44.46	629
19	234	351	44.46	629
20	234	351	44.46	629

4) Costs of Implementing BMPs

Table 227. Cropland BMP Costs in Capps Creek Sub Watershed.*

Sub Watershed #703 Capps Creek Total Annual Cost of Cropland BMPs, 3% Inflation									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	$1,619	$813	$1,626	$813	$3,335	$2,605	$1,390	$2,605	$14,807
2	$1,668	$837	$1,675	$837	$3,435	$2,684	$1,431	$2,684	$15,251
3	$1,718	$862	$1,725	$862	$3,538	$2,764	$1,474	$2,764	$15,708
4	$1,770	$888	$1,777	$888	$3,644	$2,847	$1,518	$2,847	$16,180
5	$1,823	$915	$1,830	$915	$3,754	$2,933	$1,564	$2,933	$16,665
6	$1,877	$942	$1,885	$942	$3,866	$3,020	$1,611	$3,020	$17,165
7	$1,934	$971	$1,941	$971	$3,982	$3,111	$1,659	$3,111	$17,680
8	$1,992	$1,000	$2,000	$1,000	$4,102	$3,204	$1,709	$3,204	$18,210
9	$2,051	$1,030	$2,060	$1,030	$4,225	$3,301	$1,760	$3,301	$18,757
10	$2,113	$1,061	$2,121	$1,061	$4,351	$3,400	$1,813	$3,400	$19,319
11	$2,176	$1,092	$2,185	$1,092	$4,482	$3,502	$1,868	$3,502	$19,899
12	$2,242	$1,125	$2,251	$1,125	$4,616	$3,607	$1,924	$3,607	$20,496
13	$2,309	$1,159	$2,318	$1,159	$4,755	$3,715	$1,981	$3,715	$21,111
14	$2,378	$1,194	$2,388	$1,194	$4,898	$3,826	$2,041	$3,826	$21,744
15	$2,449	$1,230	$2,459	$1,230	$5,045	$3,941	$2,102	$3,941	$22,396
16	$2,523	$1,266	$2,533	$1,266	$5,196	$4,059	$2,165	$4,059	$23,068
17	$2,599	$1,304	$2,609	$1,304	$5,352	$4,181	$2,230	$4,181	$23,760
18	$2,677	$1,344	$2,687	$1,344	$5,512	$4,306	$2,297	$4,306	$24,473
19	$2,757	$1,384	$2,768	$1,384	$5,678	$4,436	$2,366	$4,436	$25,207
20	$2,840	$1,425	$2,851	$1,425	$5,848	$4,569	$2,437	$4,569	$25,964

***Costs by HUC 12 are provided in the Appendix.**

Table 228. Livestock BMP Costs in Capps Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Cost (over 20 years)
$20,000	$28,000	$9,000	$4,000	$12,000	$0	$0	**$73,000**

Table 229. Urban BMP Costs in Capps Creek Sub Watershed.

Capps Creek Urban BMP Implementation Cost				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cost**
1	$21,780	$0	$0	$21,780
2	$0	$1,000	$0	$1,000
3	$0	$0	$150	$150
4	$0	$0	$0	$0
5	$0	$0	$0	$0
6	$21,780	$0	$0	$21,780
7	$0	$1,000	$0	$1,000
8	$0	$0	$150	$150
9	$0	$0	$0	$0
10	$0	$0	$0	$0
11	$21,780	$0	$0	$21,780
12	$0	$0	$0	$0
13	$0	$1,000	$0	$1,000
14	$0	$0	$150	$150
15	$0	$0	$0	$0
16	$21,780	$0	$0	$21,780
17	$0	$1,000	$0	$1,000
18	$0	$0	$150	$150
19	$0	$0	$0	$0
20	$0	$0	$0	$0

5) Totals by Category

Table 230. Capps Creek Sub Watershed Total Phosphorus Load Reduction by Category.

Capps Creek Total Phosphorus Reduction over the 20 Year Life of the Plan		
Best Management Practice Category	Total Phosphorus Reduction, pounds	% of Total Reduction
Cropland	6,096	52.2%
Livestock	5,498	47.2%
Urban	81	0.6%
Total	**11,675**	**100.0%**

Table 231. Capps Creek Sub Watershed Total Cost by Category.

Capps Creek Total Cost over the 20 Year Life of the Plan		
Best Management Practice Category	Total Cost	% of Total Cost
Cropland	$397,860	70.7%
Livestock	$73,000	13.0%
Urban	$91,720	16.3%
Total	**$562,580**	**100.0%**

N Hickory Creek

The Hickory Creek Sub Watershed has an impairment for bacteria. Therefore, it will be targeted for livestock BMPs to address the needed bacteria TMDL. Cropland BMPs will also be addressed. Urban BMPs will apply to this watershed to be implemented in any urban area.

Since phosphorus is tied to manure, it has been calculated that the phosphorus load reduction for control of bacteria in this sub watershed is 9,725 pounds of phosphorus over the 20 year life of the plan. If all livestock BMPs are implemented in this watershed, 503 pounds of phosphorus will be reduced annually. In addition to the phosphorus reduction that is connected to bacteria contribution, phosphorus from cropland BMPs and urban BMPs will contribute 25 pounds. **This load reduction will be attained if all BMPs are implemented in the watershed.**

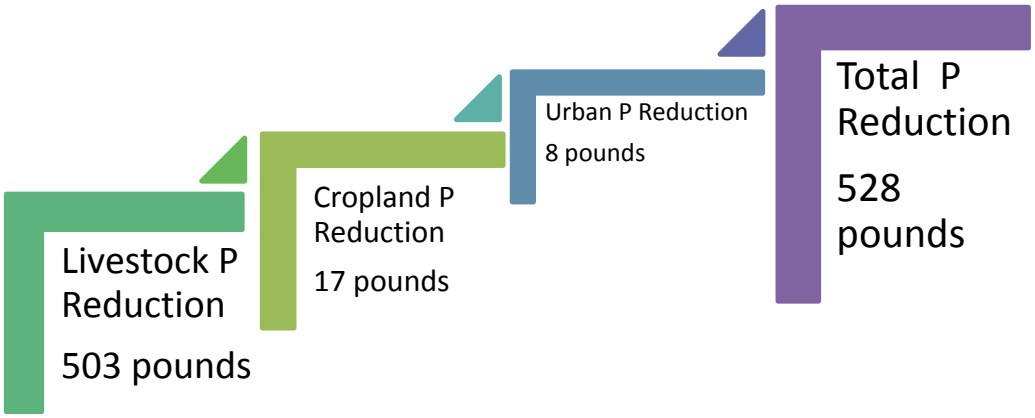

Figure 77. Annual Phosphorus Reduction by Category in Hickory Creek Sub Watershed after All BMPs have been Implemented.

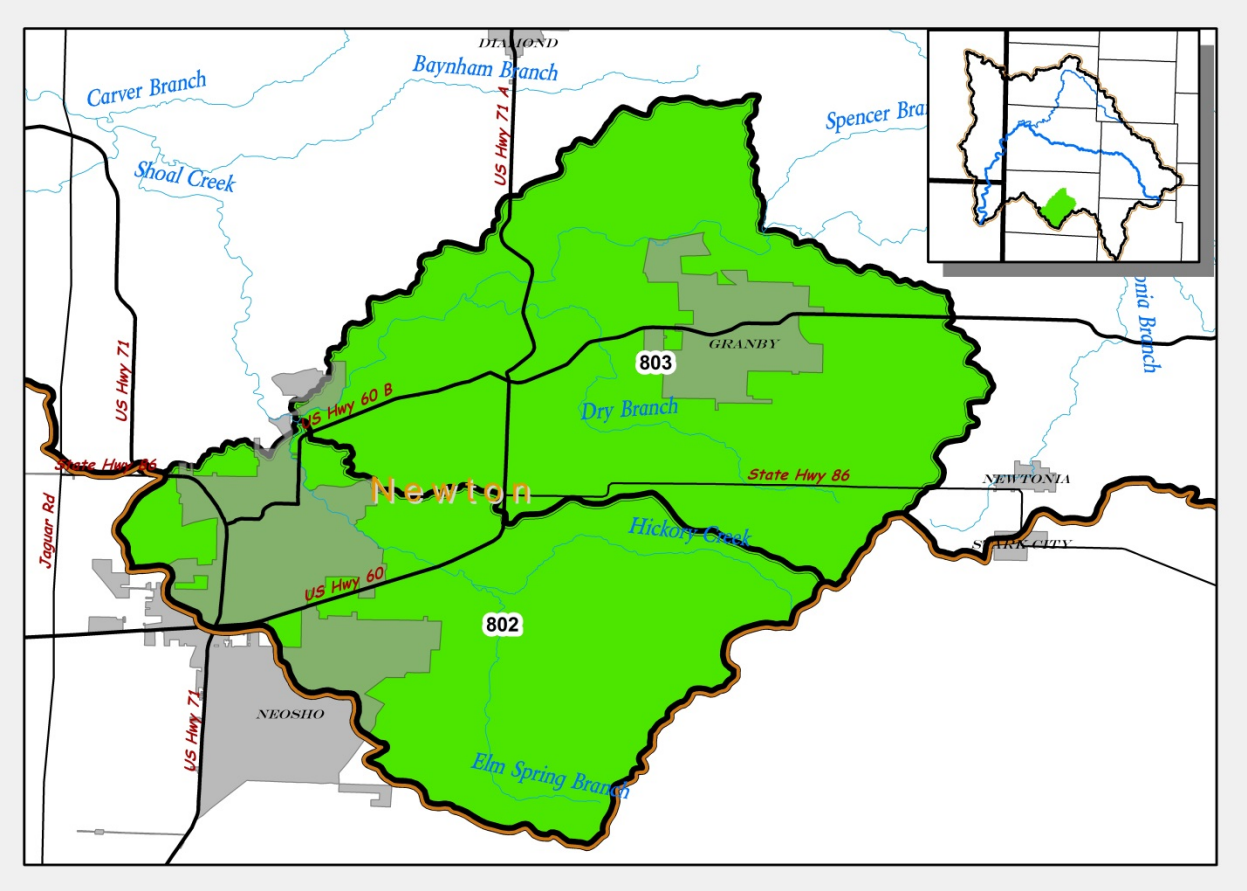

Figure 78. Hickory Creek Sub Watershed.

Table 232. SWAT Generated Land Use in Hickory Creek Sub Watershed.

Land Use	Acres	Percentage of Land Use
Cropland	1,441	3%
Hay and Pasture	24,190	45%
Urban	5,937	11%
Woodland	22,386	41%
Water	39	0%
Total	53,993	100%

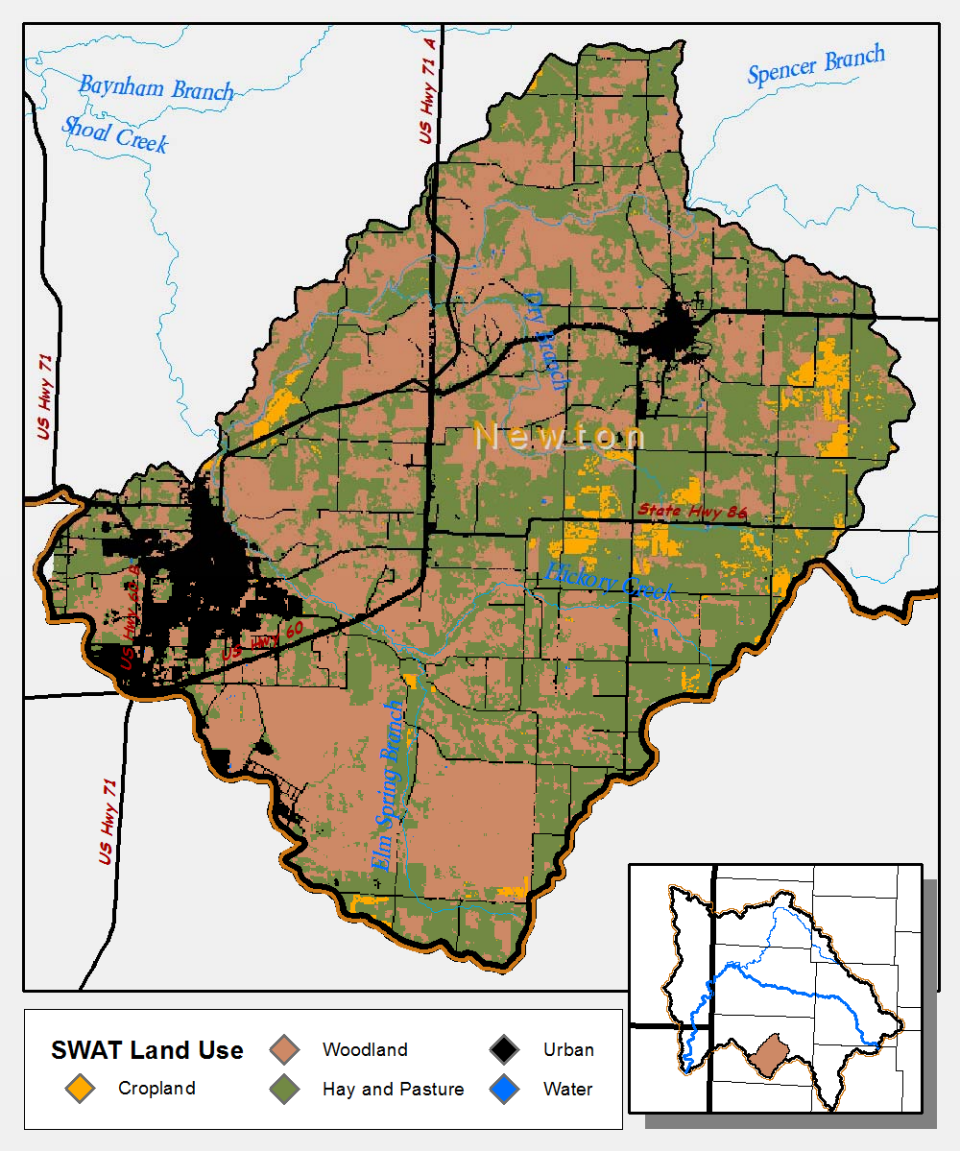

Figure 79. SWAT Generated Land Use in the Hickory Creek Sub Watershed.

1) Targeted Priority Areas

There are no Priority 1 Targeted catchment areas in the Hickory Creek Sub Watershed. Therefore, all cropland and livestock BMP placement will occur in the Priority 2 Targeted Areas first in HUC 12s 802 and 803 in the medium green color on the map below. Urban BMPs will be placed in any urban area of the sub watershed.

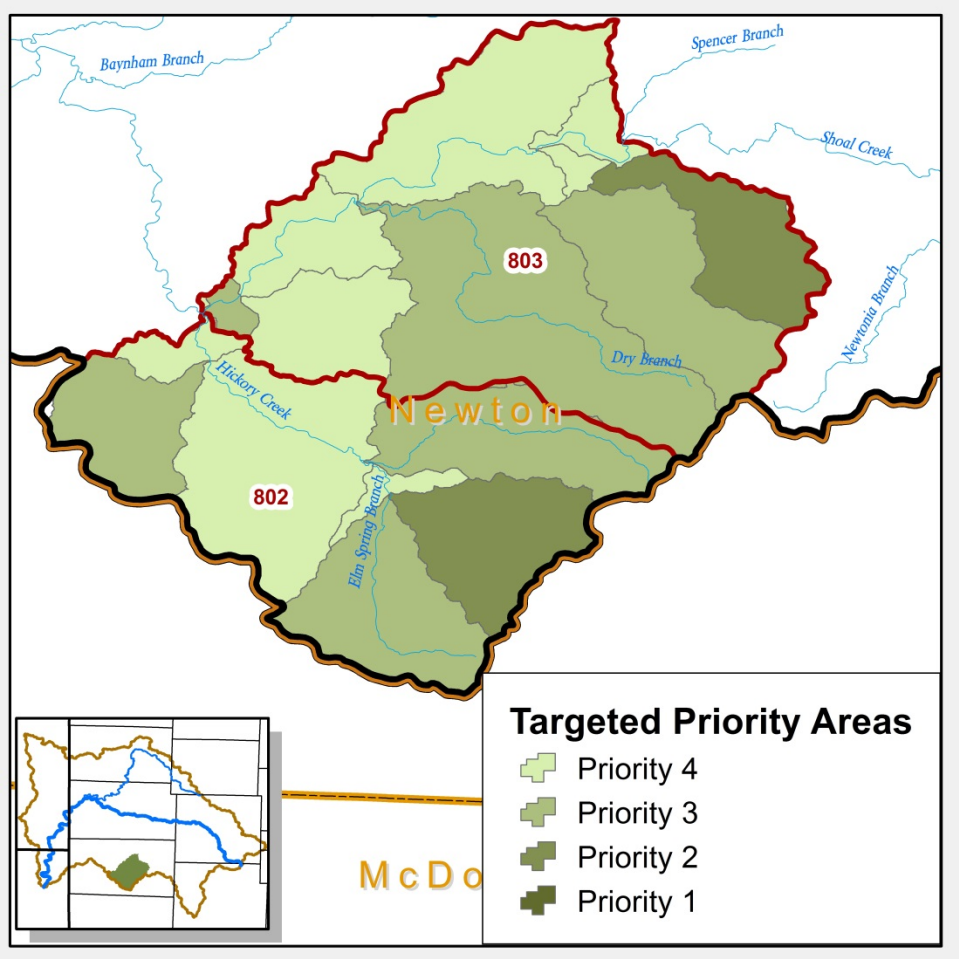

Figure 80. Targeted Priority Areas in the Hickory Creek Sub Watershed.

2) Adoption Rates for BMPs by Pollutant Source

Table 233. Cropland BMP Adoption Rates in Hickory Creek Sub Wateshed.*

Sub Watershed #802 Hickory Creek Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	2	2	2	2	2	2	2	2	17
2	2	2	2	2	2	2	2	2	17
3	2	2	2	2	2	2	2	2	17
4	2	2	2	2	2	2	2	2	17
5	2	2	2	2	2	2	2	2	17
6	2	2	2	2	2	2	2	2	17
7	2	2	2	2	2	2	2	2	17
8	2	2	2	2	2	2	2	2	17
9	2	2	2	2	2	2	2	2	17

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
10	2	2	2	2	2	2	2	2	17
11	2	2	2	2	2	2	2	2	17
12	2	2	2	2	2	2	2	2	17
13	2	2	2	2	2	2	2	2	17
14	2	2	2	2	2	2	2	2	17
15	2	2	2	2	2	2	2	2	17
16	2	2	2	2	2	2	2	2	17
17	2	2	2	2	2	2	2	2	17
18	2	2	2	2	2	2	2	2	17
19	2	2	2	2	2	2	2	2	17
20	2	2	2	2	2	2	2	2	17

***Cropland BMP adoption rates by HUC 12 are provided in the Appendix.**

Table 234. Livestock BMP Adoption Rates in Hickory Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Adoption (over 20 years)
8	8	3	4	2	2	1	**28**

Table 235. Urban BMP Adoption Rates in the Hickory Creek Sub Watershed.

Hickory Creek Urban BMP Adoption				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Total Adoption**
1	1			1
2		1		1
3			1	1
4				0
5				0
6	1			1
7		1		1
8			1	1
9				0
10				0
11	1			1
12				0
13		1		1
14			1	1
15				0

Year	Bioswale	Stream Buffers	Permanent Vegetation	Total Adoption
16	1			1
17		1		1
18			1	1
19				0
20				0

3) Pollutant Load Reductions

Table 236. Cropland Erosion Load Reductions in the Hickory Creek Sub Watershed.*

Sub Watershed #802 Hickory Creek Annual Soil Erosion Reduction									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	1	0	0	0	0	0	0	0	3
2	1	0	0	0	1	1	1	1	6
3	2	0	1	1	1	1	1	1	9
4	3	0	1	1	1	1	2	2	11
5	3	0	1	1	2	1	2	2	14
6	4	1	1	1	2	2	3	3	17
7	5	1	2	2	3	2	3	3	20
8	6	1	2	2	3	2	4	4	23
9	6	1	2	2	3	3	4	4	26
10	7	1	2	2	4	3	5	5	28
11	8	1	3	3	4	3	5	5	31
12	8	1	3	3	4	3	6	6	34
13	9	1	3	3	5	4	6	6	37
14	10	1	3	3	5	4	7	7	40
15	10	1	3	3	6	4	7	7	43
16	11	1	4	4	6	4	7	7	45
17	12	2	4	4	6	5	8	8	48
18	13	2	4	4	7	5	8	8	51
19	13	2	4	4	7	5	9	9	54
20	14	2	5	5	7	6	9	9	57

***Cropland erosion load reductions by HUC 12 are provided in the Appendix.**

Table 237. Cropland Phosphorus Load Reductions in the Hickory Creek Sub Watershed.*

Sub Watershed #802 Hickory Creek Annual Phosphorus Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	3	1	2	2	3	2	3	3	17
2	5	2	3	3	5	4	6	6	35
3	8	3	5	5	8	6	10	10	52
4	10	4	6	6	10	8	13	13	70
5	13	5	8	8	13	10	16	16	87
6	15	6	10	10	15	11	19	19	105
7	18	7	11	11	18	13	22	22	122
8	20	8	13	13	20	15	25	25	140
9	23	9	14	14	23	17	29	29	157
10	25	10	16	16	25	19	32	32	175
11	28	10	17	17	28	21	35	35	192
12	30	11	19	19	30	23	38	38	209
13	33	12	21	21	33	25	41	41	227
14	36	13	22	22	36	27	44	44	244
15	38	14	24	24	38	29	48	48	262
16	41	15	25	25	41	30	51	51	279
17	43	16	27	27	43	32	54	54	297
18	46	17	29	29	46	34	57	57	314
19	48	18	30	30	48	36	60	60	332
20	51	19	32	32	51	38	63	63	349

***Cropland phosphorus load reductions by HUC 12 are provided in the Appendix.**

Table 238. Cropland Nitrogen Load Reductions in the Hickory Creek Sub Watershed.*

Sub Watershed #802 Hickory Creek Annual Nitrogen Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	5	3	5	5	8	6	5	10	46
2	10	6	10	10	16	12	10	19	91
3	15	9	15	15	23	18	15	29	137
4	19	12	19	19	31	23	19	39	183
5	24	15	24	24	39	29	24	49	229
6	29	18	29	29	47	35	29	58	274
7	34	20	34	34	54	41	34	68	320
8	39	23	39	39	62	47	39	78	366
9	44	26	44	44	70	53	44	88	411

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
10	49	29	49	49	78	58	49	97	457
11	53	32	53	53	86	64	53	107	503
12	58	35	58	58	93	70	58	117	549
13	63	38	63	63	101	76	63	126	594
14	68	41	68	68	109	82	68	136	640
15	73	44	73	73	117	88	73	146	686
16	78	47	78	78	124	93	78	156	731
17	83	50	83	83	132	99	83	165	777
18	88	53	88	88	140	105	88	175	823
19	92	55	92	92	148	111	92	185	869
20	97	58	97	97	156	117	97	195	914

***Cropland nitrogen load reductions by HUC 12 are provided in the Appendix.**

Table 239. Livestock Phosphorus Load Reductions in the Hickory Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
840	3,800	1,425	1,520	1,777	247	444	**10,052**

Table 240. Livestock Nitrogen Load Reductions in the Hickory Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
1,582	7,157	2,684	2,863	3,346	465	837	**18,934**

Table 241. Urban Erosion Load Reduction in the Hickory Creek Sub Watershed.

Hickory Creek Urban BMP Sediment Reduction Rates (tons)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	1.03	0.00	0.00	1.03
2	1.03	1.54	0.00	2.56
3	1.03	1.54	0.10	2.67
4	1.03	1.54	0.10	2.67
5	1.03	1.54	0.10	2.67
6	2.05	1.54	0.10	3.69
7	2.05	3.08	0.10	5.23
8	2.05	3.08	0.21	5.33
9	2.05	3.08	0.21	5.33

Year	Bioswale	Stream Buffers	Permanent Vegetation	Cumulative Load Reduction
10	2.05	3.08	0.21	5.33
11	3.08	3.08	0.21	6.36
12	3.08	3.08	0.21	6.36
13	3.08	4.61	0.21	7.89
14	3.08	4.61	0.31	8.00
15	3.08	4.61	0.31	8.00
16	4.10	4.61	0.31	9.02
17	4.10	6.15	0.31	10.56
18	4.10	6.15	0.41	10.66
19	4.10	6.15	0.41	10.66
20	4.10	6.15	0.41	10.66

Table 242. Urban Phosphorus Load Reduction in the Hickory Creek Sub Watershed.

Hickory Creek Urban BMP Phosphorus Reduction Rates (pounds)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	7.5	0	0	8
2	7.5	11.25	0	19
3	7.5	11.25	1.425	20
4	7.5	11.25	1.425	20
5	7.5	11.25	1.425	20
6	15	11.25	1.425	28
7	15	22.5	1.425	39
8	15	22.5	2.85	40
9	15	22.5	2.85	40
10	15	22.5	2.85	40
11	22.5	22.5	2.85	48
12	22.5	22.5	2.85	48
13	22.5	33.75	2.85	59
14	22.5	33.75	4.275	61
15	22.5	33.75	4.275	61
16	30	33.75	4.275	68
17	30	45	4.275	79
18	30	45	5.7	81
19	30	45	5.7	81
20	30	45	5.7	81

Table 243. Urban Nitrogen Load Reduction in the Hickory Creek Sub Watershed.

Hickory Creek Urban BMP Nitrogen Reduction Rates (pounds)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	58.5	0	0	59

Year	Bioswale	Stream Buffers	Permanent Vegetation	Cumulative Load Reduction
2	58.5	87.75	0	146
3	58.5	87.75	11.115	157
4	58.5	87.75	11.115	157
5	58.5	87.75	11.115	157
6	117	87.75	11.115	216
7	117	175.5	11.115	304
8	117	175.5	22.23	315
9	117	175.5	22.23	315
10	117	175.5	22.23	315
11	175.5	175.5	22.23	373
12	175.5	175.5	22.23	373
13	175.5	263.25	22.23	461
14	175.5	263.25	33.345	472
15	175.5	263.25	33.345	472
16	234	263.25	33.345	531
17	234	351	33.345	618
18	234	351	44.46	629
19	234	351	44.46	629
20	234	351	44.46	629

4) Costs of Implementing BMPs

Table 244. Cropland BMP Costs in the Hickory Creek Sub Watershed.*

Sub Watershed #802 Hickory Creek Total Annual Cost of Cropland BMPs, 3% Inflation									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	$164	$82	$165	$82	$338	$264	$141	$264	$1,502
2	$169	$85	$170	$85	$348	$272	$145	$272	$1,547
3	$174	$87	$175	$87	$359	$280	$150	$280	$1,593
4	$179	$90	$180	$90	$370	$289	$154	$289	$1,641
5	$185	$93	$186	$93	$381	$297	$159	$297	$1,690
6	$190	$96	$191	$96	$392	$306	$163	$306	$1,741
7	$196	$98	$197	$98	$404	$316	$168	$316	$1,793
8	$202	$101	$203	$101	$416	$325	$173	$325	$1,847
9	$208	$104	$209	$104	$428	$335	$179	$335	$1,902
10	$214	$108	$215	$108	$441	$345	$184	$345	$1,959
11	$221	$111	$222	$111	$455	$355	$189	$355	$2,018
12	$227	$114	$228	$114	$468	$366	$195	$366	$2,079
13	$234	$118	$235	$118	$482	$377	$201	$377	$2,141

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
14	$241	$121	$242	$121	$497	$388	$207	$388	$2,205
15	$248	$125	$249	$125	$512	$400	$213	$400	$2,271
16	$256	$128	$257	$128	$527	$412	$220	$412	$2,340
17	$264	$132	$265	$132	$543	$424	$226	$424	$2,410
18	$271	$136	$273	$136	$559	$437	$233	$437	$2,482
19	$280	$140	$281	$140	$576	$450	$240	$450	$2,557
20	$288	$145	$289	$145	$593	$463	$247	$463	$2,633

***Cropland costs by HUC 12 are provided in the Appendix.**

Table 245. Livestock BMP Costs in Hickory Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Cost (over 20 years)
$32,000	$56,000	$9,000	$8,000	$24,000	$15,000	$1,000	**$145,000**

Table 246. Urban BMP Costs in the Hickory Creek Sub Watershed.

Hickory Creek Urban BMP Implementation Cost				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cost**
1	$21,780	$0	$0	$21,780
2	$0	$1,000	$0	$1,000
3	$0	$0	$150	$150
4	$0	$0	$0	$0
5	$0	$0	$0	$0
6	$21,780	$0	$0	$21,780
7	$0	$1,000	$0	$1,000
8	$0	$0	$150	$150
9	$0	$0	$0	$0
10	$0	$0	$0	$0
11	$21,780	$0	$0	$21,780
12	$0	$0	$0	$0
13	$0	$1,000	$0	$1,000
14	$0	$0	$150	$150
15	$0	$0	$0	$0
16	$21,780	$0	$0	$21,780
17	$0	$1,000	$0	$1,000
18	$0	$0	$150	$150
19	$0	$0	$0	$0
20	$0	$0	$0	$0

5) Totals by Category

Table 247. Hickory Creek Sub Watershed Total Phosphorus Load Reduction by Category.

Hickory Creek Total Phosphorus Reduction over the 20 Year Life of the Plan		
Best Management Practice Category	Total Phosphorus Reduction, pounds	% of Total Reduction
Cropland	349	3.3%
Livestock	10,052	95.9%
Urban	81	0.8%
Total	**10,482**	**100.0%**

Table 248. Hickory Creek Sub Watershed Total Cost by Category.

Hickory Creek Total Cost over the 20 Year Life of the Plan		
Best Management Practice Category	Total Cost	% of Total Cost
Cropland	$40,351	14.6%
Livestock	$145,000	52.3%
Urban	$91,720	33.1%
Total	**$277,071**	**100.0%**

O Jenkins Creek Watershed

The Jenkins Creek Sub Watersheds has an impairment for bacteria. Therefore, it will be targeted for livestock BMPs to address the needed bacteria TMDL. Cropland BMPs will also be addressed. Urban BMPs will not apply to this watershed due to a lack of urban areas.

Since phosphorus is tied to manure, it has been calculated that the phosphorus load reduction for control of bacteria in this sub watershed is 7,779 pounds of phosphorus over the 20 year life of the plan. If all livestock BMPs are implemented in this watershed, 419 pounds of phosphorus will be reduced annually. In addition to the phosphorus reduction that is connected to bacteria contribution, phosphorus from cropland BMPs will contribute 836 pounds. **This load reduction will be attained if all BMPs are implemented in the watershed.**

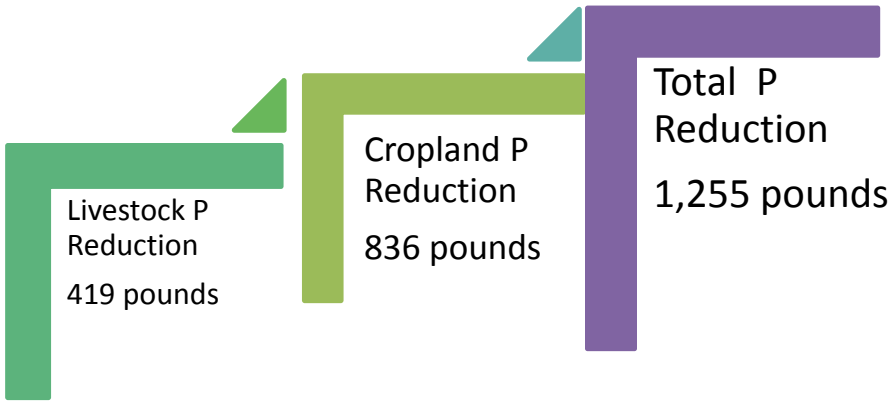

Figure 81. Annual Phosphorus Reduction by Category in Jenkins Creek Sub Watershed after All BMPs have been Implemented.

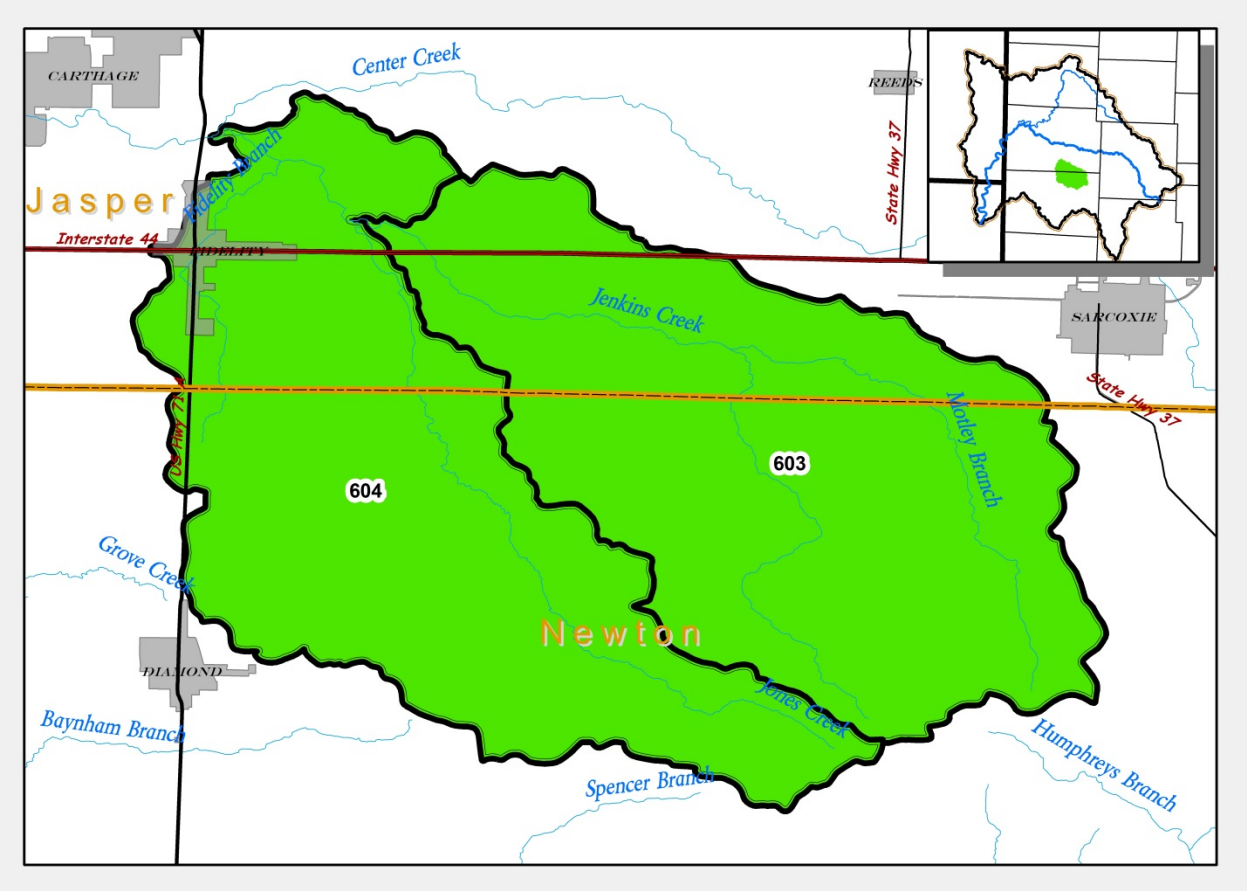

Figure 82. Jenkins Creek Sub Watershed.

Table 249. SWAT Generated Land Use in Jenkins Creek Sub Watershed.

Land Use	Acres	Percentage of Land Use
Cropland	2,582	6%
Hay and Pasture	31,141	68%
Urban	2,456	5%
Woodland	9,399	21%
Water	32	0%
Total	45,610	100%

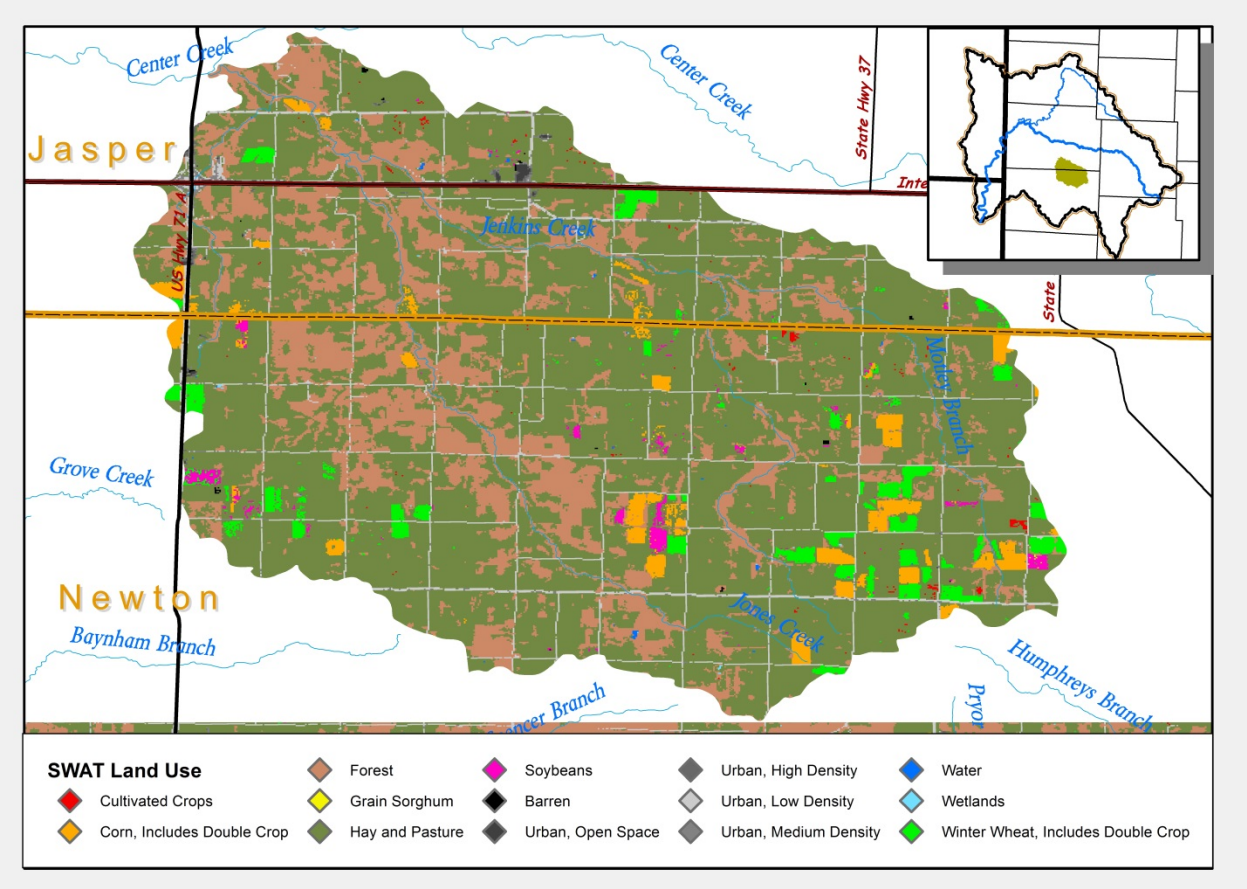

Figure 83. SWAT Generated Land Use in the Jenkins Creek Sub Watershed.

1) Targeted Priority Areas

The Priority 1 Targeted Catchment Area is located in HUC 603 in the Jenkins Creek Sub Watershed. Therefore, all BMP livestock and cropland placement will occur in this priority area as shown in the dark green color in the map below.

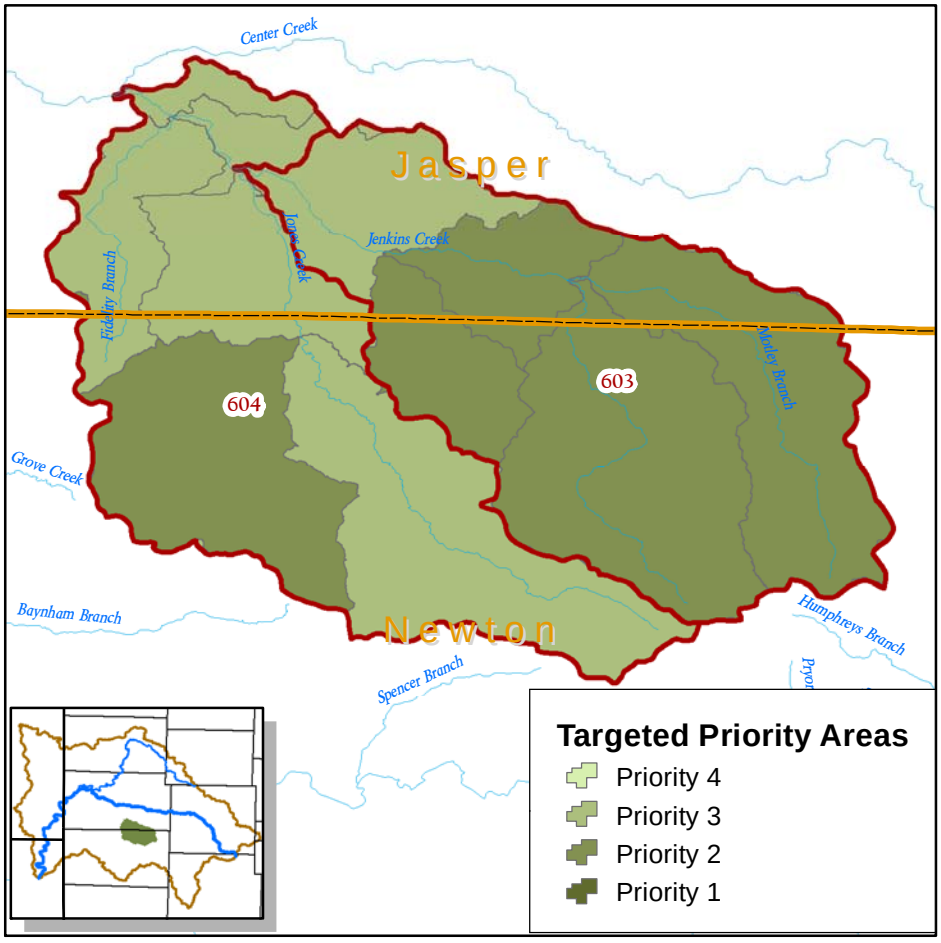

Figure 84. Targeted Priority Areas in the Jenkins Creek Sub Watershed.

2) Adoption Rates for BMPs by Pollutant Source

Table 250. Cropland BMP Adoption Rates in Jenkins Creek Sub Watershed.*

Sub Watershed #603 Jenkins Creek Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	70	70	70	70	70	70	70	70	562
2	70	70	70	70	70	70	70	70	562
3	70	70	70	70	70	70	70	70	562
4	70	70	70	70	70	70	70	70	562
5	70	70	70	70	70	70	70	70	562
6	70	70	70	70	70	70	70	70	562
7	70	70	70	70	70	70	70	70	562
8	70	70	70	70	70	70	70	70	562
9	70	70	70	70	70	70	70	70	562

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
10	70	70	70	70	70	70	70	70	562
11	70	70	70	70	70	70	70	70	562
12	70	70	70	70	70	70	70	70	562
13	70	70	70	70	70	70	70	70	562
14	70	70	70	70	70	70	70	70	562
15	70	70	70	70	70	70	70	70	562
16	70	70	70	70	70	70	70	70	562
17	70	70	70	70	70	70	70	70	562
18	70	70	70	70	70	70	70	70	562
19	70	70	70	70	70	70	70	70	562
20	70	70	70	70	70	70	70	70	562

***Cropland adoption rates by HUC 12 are provided in the Appendix.**

Table 251. Livestock BMP Adoption Rates in the Jenkins Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Adoption (over 20 years)
8	8	2	2	1	2	2	**25**

3) Pollutant Load Reductions

Table 252. Cropland Erosion Load Reduction in the Jenkins Creek Sub Watershed.*

Sub Watershed #603 Jenkins Creek Annual Annual Soil Erosion Reduction									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	28	4	9	9	15	11	19	19	114
2	56	7	19	19	30	22	37	37	227
3	84	11	28	28	45	34	56	56	341
4	112	15	37	37	60	45	74	74	454
5	140	19	47	47	74	56	93	93	568
6	168	22	56	56	89	67	112	112	681
7	196	26	65	65	104	78	130	130	795
8	223	30	74	74	119	89	149	149	909
9	251	34	84	84	134	101	168	168	1,022
10	279	37	93	93	149	112	186	186	1,136
11	307	41	102	102	164	123	205	205	1,249
12	335	45	112	112	179	134	223	223	1,363

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
13	363	48	121	121	194	145	242	242	1,477
14	391	52	130	130	209	156	261	261	1,590
15	419	56	140	140	223	168	279	279	1,704
16	447	60	149	149	238	179	298	298	1,817
17	475	63	158	158	253	190	317	317	1,931
18	503	67	168	168	268	201	335	335	2,044
19	531	71	177	177	283	212	354	354	2,158
20	559	74	186	186	298	223	372	372	2,272

***Cropland erosion load reductions by HUC are provided in the Appendix.**

Table 253. Cropland Phosphorus Load Reductions in the Jenkins Creek Sub Wateshed.*

Sub Watershed #603 Jenkins Creek Annual Phosphorus Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	122	46	76	76	122	91	152	152	836
2	243	91	152	152	243	182	304	304	1,671
3	365	137	228	228	365	273	456	456	2,507
4	486	182	304	304	486	365	608	608	3,343
5	608	228	380	380	608	456	760	760	4,178
6	729	273	456	456	729	547	912	912	5,014
7	851	319	532	532	851	638	1,064	1,064	5,849
8	972	365	608	608	972	729	1,215	1,215	6,685
9	1,094	410	684	684	1,094	820	1,367	1,367	7,521
10	1,215	456	760	760	1,215	912	1,519	1,519	8,356
11	1,337	501	836	836	1,337	1,003	1,671	1,671	9,192
12	1,459	547	912	912	1,459	1,094	1,823	1,823	10,028
13	1,580	593	988	988	1,580	1,185	1,975	1,975	10,863
14	1,702	638	1,064	1,064	1,702	1,276	2,127	2,127	11,699
15	1,823	684	1,140	1,140	1,823	1,367	2,279	2,279	12,535
16	1,945	729	1,215	1,215	1,945	1,459	2,431	2,431	13,370
17	2,066	775	1,291	1,291	2,066	1,550	2,583	2,583	14,206
18	2,188	820	1,367	1,367	2,188	1,641	2,735	2,735	15,041
19	2,309	866	1,443	1,443	2,309	1,732	2,887	2,887	15,877
20	2,431	912	1,519	1,519	2,431	1,823	3,039	3,039	16,713

***Cropland phosphorus load reductions by HUC are provided in the Appendix.**

Table 254. Cropland Nitrogen Load Reductions in the Jenkins Creek Sub Watershed.*

Sub Watershed #603 Jenkins Creek Annual Nitrogen Reduction (lbs)									
Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
1	200	120	200	200	319	240	200	399	1,877
2	399	240	399	399	639	479	399	799	3,753
3	599	359	599	599	958	719	599	1,198	5,630
4	799	479	799	799	1,278	958	799	1,597	7,507
5	998	599	998	998	1,597	1,198	998	1,996	9,383
6	1,198	719	1,198	1,198	1,917	1,437	1,198	2,396	11,260
7	1,398	839	1,398	1,398	2,236	1,677	1,398	2,795	13,137
8	1,597	958	1,597	1,597	2,555	1,917	1,597	3,194	15,013
9	1,797	1,078	1,797	1,797	2,875	2,156	1,797	3,594	16,890
10	1,996	1,198	1,996	1,996	3,194	2,396	1,996	3,993	18,767
11	2,196	1,318	2,196	2,196	3,514	2,635	2,196	4,392	20,643
12	2,396	1,437	2,396	2,396	3,833	2,875	2,396	4,791	22,520
13	2,595	1,557	2,595	2,595	4,153	3,114	2,595	5,191	24,397
14	2,795	1,677	2,795	2,795	4,472	3,354	2,795	5,590	26,273
15	2,995	1,797	2,995	2,995	4,791	3,594	2,995	5,989	28,150
16	3,194	1,917	3,194	3,194	5,111	3,833	3,194	6,389	30,027
17	3,394	2,036	3,394	3,394	5,430	4,073	3,394	6,788	31,903
18	3,594	2,156	3,594	3,594	5,750	4,312	3,594	7,187	33,780
19	3,793	2,276	3,793	3,793	6,069	4,552	3,793	7,587	35,657
20	3,993	2,396	3,993	3,993	6,389	4,791	3,993	7,986	37,533

*Cropland phosphorus load reductions by HUC are provided in the Appendix.

Table 255. Livestock Phosphorus Load Reductions in the Jenkins Creek Sub Watershed.

Phosphorus Load Reduction in Pounds (after all livestock BMPs are installed)							
Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
840	3,800	951	760	888	247	888	**8,373**

Table 256. Livestock Nitrogen Load Reductions in the Jenkins Creek Sub Watershed.

Nitrogen Load Reduction in Pounds (after all livestock BMPs are installed)							
Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Load Reduction
1,582	7,157	1,789	1,431	1,673	465	1,673	**15,771**

4) Costs of Implementing BMPs

Table 257. Cropland BMP Costs in the Jenkins Sub Watershed.*

Sub Watershed #603 Jenkins Creek Total Annual Cost of Cropland BMPs, 3% Inflation									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	$5,461	$2,742	$5,483	$2,742	$11,248	$8,787	$4,686	$8,787	$49,936
2	$5,625	$2,824	$5,648	$2,824	$11,585	$9,051	$4,827	$9,051	$51,434
3	$5,794	$2,909	$5,817	$2,909	$11,933	$9,322	$4,972	$9,322	$52,977
4	$5,968	$2,996	$5,992	$2,996	$12,290	$9,602	$5,121	$9,602	$54,566
5	$6,147	$3,086	$6,171	$3,086	$12,659	$9,890	$5,275	$9,890	$56,203
6	$6,331	$3,178	$6,357	$3,178	$13,039	$10,187	$5,433	$10,187	$57,890
7	$6,521	$3,274	$6,547	$3,274	$13,430	$10,492	$5,596	$10,492	$59,626
8	$6,717	$3,372	$6,744	$3,372	$13,833	$10,807	$5,764	$10,807	$61,415
9	$6,918	$3,473	$6,946	$3,473	$14,248	$11,131	$5,937	$11,131	$63,257
10	$7,126	$3,577	$7,154	$3,577	$14,675	$11,465	$6,115	$11,465	$65,155
11	$7,340	$3,684	$7,369	$3,684	$15,116	$11,809	$6,298	$11,809	$67,110
12	$7,560	$3,795	$7,590	$3,795	$15,569	$12,163	$6,487	$12,163	$69,123
13	$7,787	$3,909	$7,818	$3,909	$16,036	$12,528	$6,682	$12,528	$71,197
14	$8,020	$4,026	$8,052	$4,026	$16,517	$12,904	$6,882	$12,904	$73,333
15	$8,261	$4,147	$8,294	$4,147	$17,013	$13,291	$7,089	$13,291	$75,533
16	$8,509	$4,271	$8,543	$4,271	$17,523	$13,690	$7,301	$13,690	$77,799
17	$8,764	$4,399	$8,799	$4,399	$18,049	$14,101	$7,520	$14,101	$80,133
18	$9,027	$4,531	$9,063	$4,531	$18,590	$14,524	$7,746	$14,524	$82,537
19	$9,298	$4,667	$9,335	$4,667	$19,148	$14,960	$7,978	$14,960	$85,013
20	$9,577	$4,807	$9,615	$4,807	$19,723	$15,408	$8,218	$15,408	$87,563

***Cropland costs by HUC 12 are provided in the Appendix.**

Table 258. Livestock BMP Costs in the Jenkins Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Cost (over 20 years)
$32,000	$56,000	$6,000	$4,000	$12,000	$15,000	$2,000	**$127,000**

5) Totals by Category

Table 259. Jenkins Creek Sub Watershed Total Phosphorus Load Reduction by Category.

Jenkins Creek Total Phosphorus Reduction over the 20 Year Life of the Plan		
Best Management Practice Category	Total Phosphorus Reduction, pounds	% of Total Reduction
Cropland	16,713	67%
Livestock	8,373	33%
Total	**25,086**	**100%**

Table 260. Jenkins Creek Sub Watershed Total Cost by Category.

Jenkins Creek Total Cost over the 20 Year Life of the Plan		
Best Management Practice Category	Total Cost	% of Total Cost
Cropland	$1,341,799	90%
Livestock	$127,000	10%
Total	**$1,486,799**	**100%**

P Thurman Creek

The Thurman Creek Sub Watershed has an impairment for bacteria. Therefore, it will be targeted for livestock BMPs to address the needed bacteria TMDL. Cropland BMPs will also be addressed. Urban BMPs will apply to this watershed to be implemented in any urban area. The city of Joplin and several suburbs are contained in this watershed.

Since phosphorus is tied to manure, it has been calculated that the phosphorus load reduction for control of bacteria in this sub watershed is 6,305 pounds of phosphorus over the 20 year life of the plan. If all livestock BMPs are implemented in this watershed, 319 pounds of phosphorus will be reduced annually. In addition to the phosphorus reduction that is connected to bacteria contribution, phosphorus from cropland BMPs and urban BMPs will contribute 374 pounds. **This load reduction will be attained if all BMPs are implemented in the watershed.**

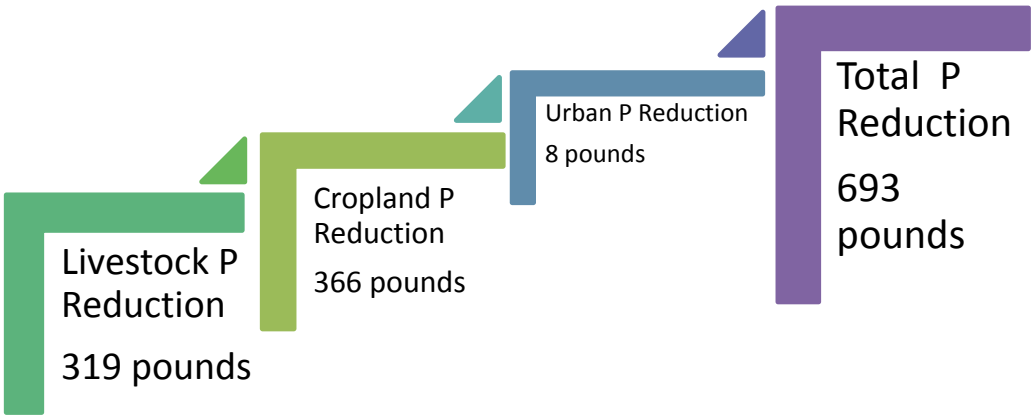

Figure 85. Annual Phosphorus Reduction by Category in Thurman Creek Sub Watershed after All BMPs have been Implemented.

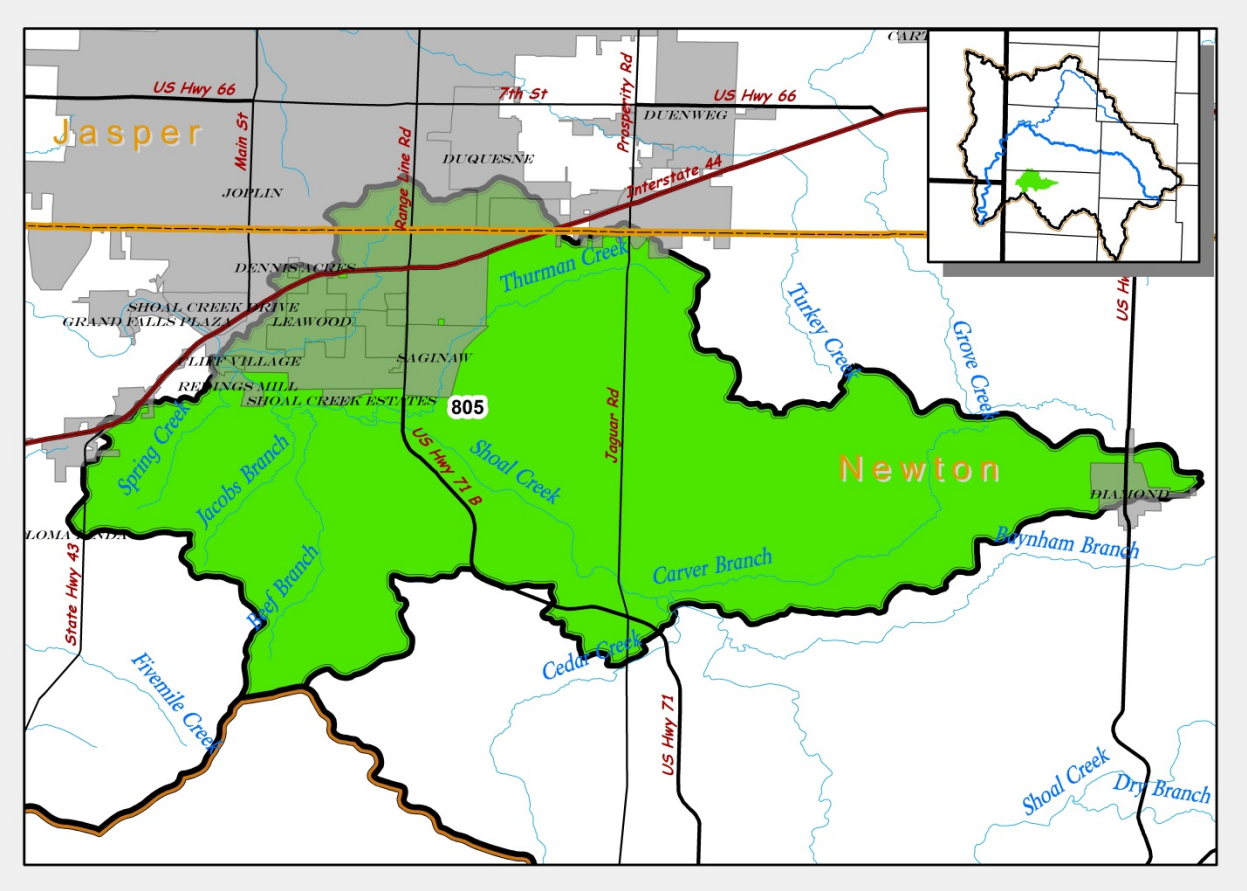

Figure 86. Thurman Creek Sub Watershed.

Table 261. SWAT Generated Land Use in Thurman Creek Sub Watershed.

Land Use	Acres	Percentage of Land Use
Cropland	253	1%
Hay and Pasture	11,667	34%
Urban	4,110	12%
Woodland	18,686	53%
Water	97	0%
Total	34,814	100%

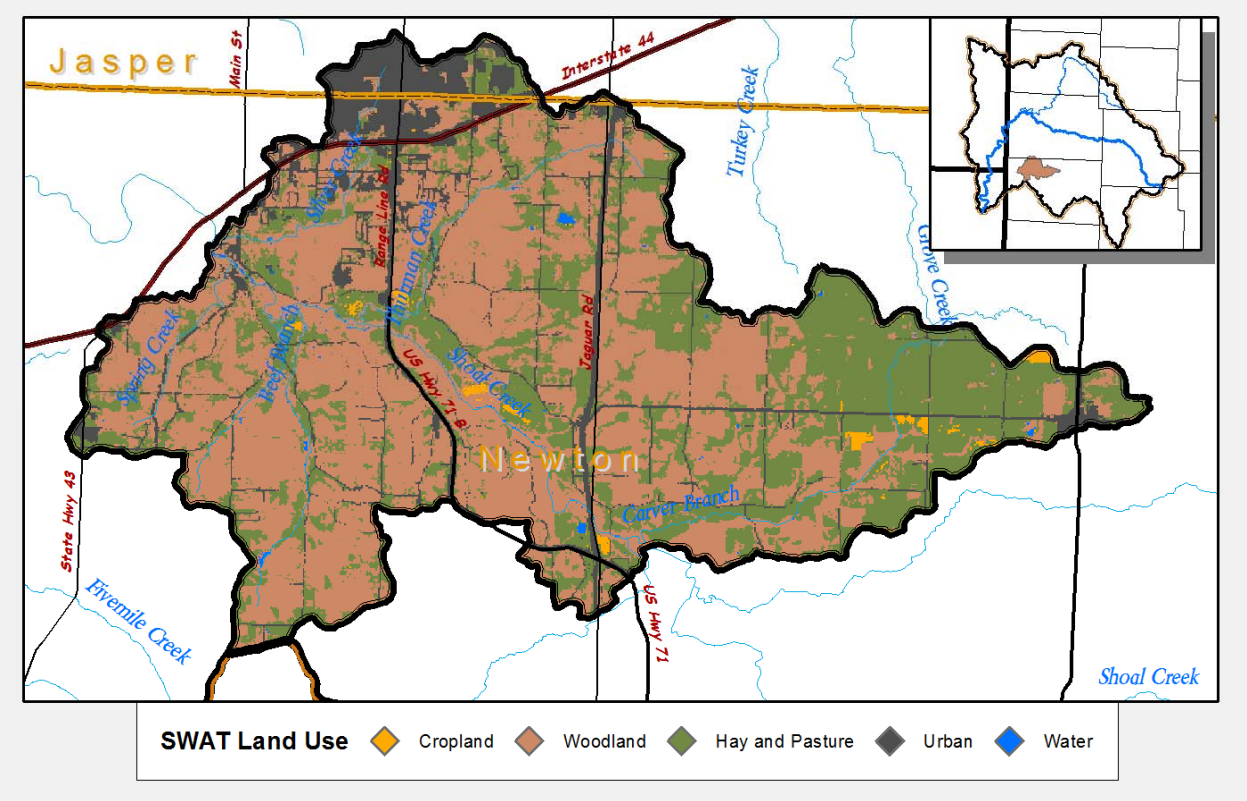

Figure 87. SWAT Generated Land Use in the Thurman Creek Sub Watershed.

1) Targeted Priority Areas

There are no Priority 1 Targeted catchment areas in the Thurman Creek Sub Watershed. Therefore, all cropland and livestock BMP placement will occur in the Priority 2 catchment area as shown in medium green in the map below in HUC 805. Urban BMPs will be placed in any urban area of the sub watershed.

Figure 88. Targeted Priority Areas in the Thurman Creek Sub Watershed.

2) Adoption Rates for BMPs by Pollutant Source

Table 262. Cropland Adoption Rates in the Thurman Creek Sub Watershed.

Sub Watershed #805 Thurman Creek Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	68	68	68	68	68	68	68	68	543
2	68	68	68	68	68	68	68	68	543
3	68	68	68	68	68	68	68	68	543
4	68	68	68	68	68	68	68	68	543
5	68	68	68	68	68	68	68	68	543
6	68	68	68	68	68	68	68	68	543
7	68	68	68	68	68	68	68	68	543
8	68	68	68	68	68	68	68	68	543
9	68	68	68	68	68	68	68	68	543

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
10	68	68	68	68	68	68	68	68	543
11	68	68	68	68	68	68	68	68	543
12	68	68	68	68	68	68	68	68	543
13	68	68	68	68	68	68	68	68	543
14	68	68	68	68	68	68	68	68	543
15	68	68	68	68	68	68	68	68	543
16	68	68	68	68	68	68	68	68	543
17	68	68	68	68	68	68	68	68	543
18	68	68	68	68	68	68	68	68	543
19	68	68	68	68	68	68	68	68	543
20	68	68	68	68	68	68	68	68	543

Table 263. Livestock BMP Adoption Rates in the Thurman Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Adoption (over 20 years)
5	5	2	2	2	0	0	**16**

Table 264. Urban BMP Adoption Rates in the Thurman Creek Sub Watershed.

Thurman Creek Urban BMP Adoption				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Total Adoption**
1	1			1
2		1		1
3			1	1
4				0
5				0
6	1			1
7		1		1
8			1	1
9				0
10				0
11	1			1
12				0
13		1		1
14			1	1
15				0
16	1			1

Year	Bioswale	Stream Buffers	Permanent Vegetation	Total Adoption
17		1		1
18			1	1
19				0
20				0

3) Pollutant Load Reductions

Table 265. Cropland Erosion Load Reduction in Thurman Creek Sub Watershed.

Sub Watershed #805 Thurman Creek Annual Soil Erosion Reduction									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	13	2	4	4	7	5	9	9	53
2	26	3	9	9	14	10	17	17	106
3	39	5	13	13	21	16	26	26	159
4	52	7	17	17	28	21	35	35	212
5	65	9	22	22	35	26	44	44	266
6	78	10	26	26	42	31	52	52	319
7	91	12	30	30	49	37	61	61	372
8	105	14	35	35	56	42	70	70	425
9	118	16	39	39	63	47	78	78	478
10	131	17	44	44	70	52	87	87	531
11	144	19	48	48	77	57	96	96	584
12	157	21	52	52	84	63	105	105	637
13	170	23	57	57	91	68	113	113	691
14	183	24	61	61	98	73	122	122	744
15	196	26	65	65	105	78	131	131	797
16	209	28	70	70	111	84	139	139	850
17	222	30	74	74	118	89	148	148	903
18	235	31	78	78	125	94	157	157	956
19	248	33	83	83	132	99	165	165	1,009
20	261	35	87	87	139	105	174	174	1,062

Table 266. Cropland Phosphorus Load Reduction in Thurman Creek Sub Watershed.

Sub Watershed #805 Thurman Creek Annual Phosphorus Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	53	20	33	33	53	40	67	67	366
2	107	40	67	67	107	80	133	133	733

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
3	160	60	100	100	160	120	200	200	1,099
4	213	80	133	133	213	160	266	266	1,465
5	266	100	166	166	266	200	333	333	1,831
6	320	120	200	200	320	240	400	400	2,198
7	373	140	233	233	373	280	466	466	2,564
8	426	160	266	266	426	320	533	533	2,930
9	479	180	300	300	479	360	599	599	3,296
10	533	200	333	333	533	400	666	666	3,663
11	586	220	366	366	586	440	733	733	4,029
12	639	240	400	400	639	479	799	799	4,395
13	693	260	433	433	693	519	866	866	4,761
14	746	280	466	466	746	559	932	932	5,128
15	799	300	499	499	799	599	999	999	5,494
16	852	320	533	533	852	639	1,065	1,065	5,860
17	906	340	566	566	906	679	1,132	1,132	6,226
18	959	360	599	599	959	719	1,199	1,199	6,593
19	1,012	380	633	633	1,012	759	1,265	1,265	6,959
20	1,065	400	666	666	1,065	799	1,332	1,332	7,325

Table 267. Cropland Nitrogen Load Reduction in Thurman Creek Sub Watershed.

Sub Watershed #805 Thurman Creek Annual Nitrogen Reduction (lbs)									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	104	62	104	104	166	125	104	208	976
2	208	125	208	208	332	249	208	415	1,953
3	312	187	312	312	499	374	312	623	2,929
4	415	249	415	415	665	499	415	831	3,906
5	519	312	519	519	831	623	519	1,039	4,882
6	623	374	623	623	997	748	623	1,246	5,858
7	727	436	727	727	1,163	873	727	1,454	6,835
8	831	499	831	831	1,330	997	831	1,662	7,811
9	935	561	935	935	1,496	1,122	935	1,870	8,788
10	1,039	623	1,039	1,039	1,662	1,246	1,039	2,077	9,764
11	1,143	686	1,143	1,143	1,828	1,371	1,143	2,285	10,740
12	1,246	748	1,246	1,246	1,994	1,496	1,246	2,493	11,717
13	1,350	810	1,350	1,350	2,161	1,620	1,350	2,701	12,693
14	1,454	873	1,454	1,454	2,327	1,745	1,454	2,908	13,670

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
15	1,558	935	1,558	1,558	2,493	1,870	1,558	3,116	14,646
16	1,662	997	1,662	1,662	2,659	1,994	1,662	3,324	15,622
17	1,766	1,059	1,766	1,766	2,825	2,119	1,766	3,532	16,599
18	1,870	1,122	1,870	1,870	2,992	2,244	1,870	3,739	17,575
19	1,974	1,184	1,974	1,974	3,158	2,368	1,974	3,947	18,552
20	2,077	1,246	2,077	2,077	3,324	2,493	2,077	4,155	19,528

Table 268. Livestock Phosphorus Load Reduction in the Thurman Creek Sub Watershed.

Phosphorus Load Reduction in Pounds (after all livestock BMPs are installed)							
Off-Stream Watering System	**Rotational Grazing**	**Relocate Pasture Feeding Site**	**Grazing Mgmt Plans**	**Relocate Feeding Pens**	**Fence off Streams and Ponds**	**Vegetative Filter Strip**	**Total Load Reduction**
525	2,375	950	760	1,777	0	0	**6,386**

Table 269. Livestock Nitrogen Load Reduction in the Thurman Creek Sub Watershed.

Nitrogen Load Reduction in Pounds (after all livestock BMPs are installed)							
Off-Stream Watering System	**Rotational Grazing**	**Relocate Pasture Feeding Site**	**Grazing Mgmt Plans**	**Relocate Feeding Pens**	**Fence off Streams and Ponds**	**Vegetative Filter Strip**	**Total Load Reduction**
989	4,473	1,789	1,431	3,346	0	0	**12,029**

Table 270. Urban Erosion Load Reduction in the Thurman Creek Sub Watershed.

Thurman Creek Urban BMP Sediment Reduction Rates (tons)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	1.03	0.00	0.00	1.03
2	1.03	1.54	0.00	2.56
3	1.03	1.54	0.10	2.67
4	1.03	1.54	0.10	2.67
5	1.03	1.54	0.10	2.67
6	2.05	1.54	0.10	3.69
7	2.05	3.08	0.10	5.23
8	2.05	3.08	0.21	5.33
9	2.05	3.08	0.21	5.33
10	2.05	3.08	0.21	5.33
11	3.08	3.08	0.21	6.36
12	3.08	3.08	0.21	6.36
13	3.08	4.61	0.21	7.89

Year	Bioswale	Stream Buffers	Permanent Vegetation	Cumulative Load Reduction
14	3.08	4.61	0.31	8.00
15	3.08	4.61	0.31	8.00
16	4.10	4.61	0.31	9.02
17	4.10	6.15	0.31	10.56
18	4.10	6.15	0.41	10.66
19	4.10	6.15	0.41	10.66
20	4.10	6.15	0.41	10.66

Table 271. Urban Phosphorus Load Reduction in the Thurman Creek Sub Watershed.

Thurman Creek Urban BMP Phosphorus Reduction Rates (pounds)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	7.5	0	0	8
2	7.5	11.25	0	19
3	7.5	11.25	1.425	20
4	7.5	11.25	1.425	20
5	7.5	11.25	1.425	20
6	15	11.25	1.425	28
7	15	22.5	1.425	39
8	15	22.5	2.85	40
9	15	22.5	2.85	40
10	15	22.5	2.85	40
11	22.5	22.5	2.85	48
12	22.5	22.5	2.85	48
13	22.5	33.75	2.85	59
14	22.5	33.75	4.275	61
15	22.5	33.75	4.275	61
16	30	33.75	4.275	68
17	30	45	4.275	79
18	30	45	5.7	81
19	30	45	5.7	81
20	30	45	5.7	81

Table 272. Urban Nitrogen Load Reduction in the Thurman Creek Sub Watershed.

Thurman Creek Urban BMP Nitrogen Reduction Rates (pounds)				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cumulative Load Reduction**
1	58.5	0	0	59
2	58.5	87.75	0	146
3	58.5	87.75	11.115	157
4	58.5	87.75	11.115	157
5	58.5	87.75	11.115	157

Year	Bioswale	Stream Buffers	Permanent Vegetation	Cumulative Load Reduction
6	117	87.75	11.115	216
7	117	175.5	11.115	304
8	117	175.5	22.23	315
9	117	175.5	22.23	315
10	117	175.5	22.23	315
11	175.5	175.5	22.23	373
12	175.5	175.5	22.23	373
13	175.5	263.25	22.23	461
14	175.5	263.25	33.345	472
15	175.5	263.25	33.345	472
16	234	263.25	33.345	531
17	234	351	33.345	618
18	234	351	44.46	629
19	234	351	44.46	629
20	234	351	44.46	629

4) Costs of Implementing BMPs

Table 273. Cropland BMP Costs in the Thurman Creek Sub Watershed.

Sub Watershed #805 Thurman Creek Total Annual Cost of Cropland BMPs, 3% Inflation									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	$5,274	$2,648	$5,295	$2,648	$10,862	$8,486	$4,526	$8,486	$48,224
2	$5,432	$2,727	$5,454	$2,727	$11,188	$8,740	$4,662	$8,740	$49,670
3	$5,595	$2,809	$5,618	$2,809	$11,523	$9,003	$4,801	$9,003	$51,160
4	$5,763	$2,893	$5,786	$2,893	$11,869	$9,273	$4,945	$9,273	$52,695
5	$5,936	$2,980	$5,960	$2,980	$12,225	$9,551	$5,094	$9,551	$54,276
6	$6,114	$3,069	$6,139	$3,069	$12,592	$9,837	$5,247	$9,837	$55,904
7	$6,298	$3,161	$6,323	$3,161	$12,970	$10,132	$5,404	$10,132	$57,581
8	$6,486	$3,256	$6,512	$3,256	$13,359	$10,436	$5,566	$10,436	$59,309
9	$6,681	$3,354	$6,708	$3,354	$13,759	$10,750	$5,733	$10,750	$61,088
10	$6,881	$3,454	$6,909	$3,454	$14,172	$11,072	$5,905	$11,072	$62,921
11	$7,088	$3,558	$7,116	$3,558	$14,597	$11,404	$6,082	$11,404	$64,808
12	$7,301	$3,665	$7,330	$3,665	$15,035	$11,746	$6,265	$11,746	$66,753
13	$7,520	$3,775	$7,550	$3,775	$15,486	$12,099	$6,453	$12,099	$68,755
14	$7,745	$3,888	$7,776	$3,888	$15,951	$12,462	$6,646	$12,462	$70,818
15	$7,978	$4,005	$8,009	$4,005	$16,429	$12,836	$6,846	$12,836	$72,942
16	$8,217	$4,125	$8,250	$4,125	$16,922	$13,221	$7,051	$13,221	$75,131
17	$8,463	$4,249	$8,497	$4,249	$17,430	$13,617	$7,263	$13,617	$77,385

Year	No-Till	Cover Crops	Nutrient Mgmt Plan	Cons Crop Rotation	Grassed Waterways	Terraces	Vegetative Buffers	Water Retention Structures	Total
18	$8,717	$4,376	$8,752	$4,376	$17,953	$14,026	$7,480	$14,026	$79,706
19	$8,979	$4,507	$9,015	$4,507	$18,492	$14,446	$7,705	$14,446	$82,097
20	$9,248	$4,643	$9,285	$4,643	$19,046	$14,880	$7,936	$14,880	$84,560

Table 274. Livestock BMP Costs in the Thurman Creek Sub Watershed.

Off-Stream Watering System	Rotational Grazing	Relocate Pasture Feeding Site	Grazing Mgmt Plans	Relocate Feeding Pens	Fence off Streams and Ponds	Vegetative Filter Strip	Total Cost (over 20 years)
$20,000	$35,000	$6,000	$4,000	$24,000	$0	$0	**$89,000**

Table 275. Urban BMP Costs in the Thurman Creek Sub Watershed.

Thurman Creek Urban BMP Implementation Cost				
Year	**Bioswale**	**Stream Buffers**	**Permanent Vegetation**	**Cost**
1	$21,780	$0	$0	$21,780
2	$0	$1,000	$0	$1,000
3	$0	$0	$150	$150
4	$0	$0	$0	$0
5	$0	$0	$0	$0
6	$21,780	$0	$0	$21,780
7	$0	$1,000	$0	$1,000
8	$0	$0	$150	$150
9	$0	$0	$0	$0
10	$0	$0	$0	$0
11	$21,780	$0	$0	$21,780
12	$0	$0	$0	$0
13	$0	$1,000	$0	$1,000
14	$0	$0	$150	$150
15	$0	$0	$0	$0
16	$21,780	$0	$0	$21,780
17	$0	$1,000	$0	$1,000
18	$0	$0	$150	$150
19	$0	$0	$0	$0
20	$0	$0	$0	$0

5) Totals by Category

Table 276. Thurman Creek Sub Watershed Total Phosphorus Load Reduction by Category.

Thurman Creek Total Phosphorus Reduction over the 20 Year Life of the Plan		
Best Management Practice Category	Total Phosphorus Reduction, pounds	% of Total Reduction
Cropland	7,325	53.1%
Livestock	6,386	46.3%
Urban	81	0.6%
Total	**13,792**	**100.0%**

Table 277. Thurman Creek Sub Watershed Total Cost by Category.

Thurman Creek Total Cost over the 20 Year Life of the Plan		
Best Management Practice Category	Total Cost	% of Total Cost
Cropland	$1,295,784	87.8%
Livestock	$89,000	6.0%
Urban	$91,720	6.2
Total	**$1,476,504**	**100.0%**

11. Appendix

A SWAT Generated Loads

1) North Fork Spring River

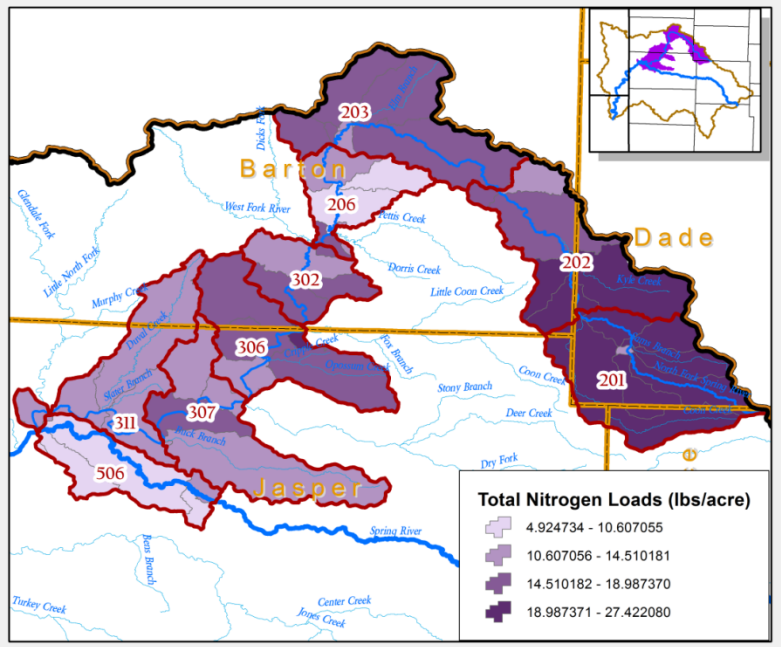

Figure 89. North Fork Spring River Nitrogen Loads

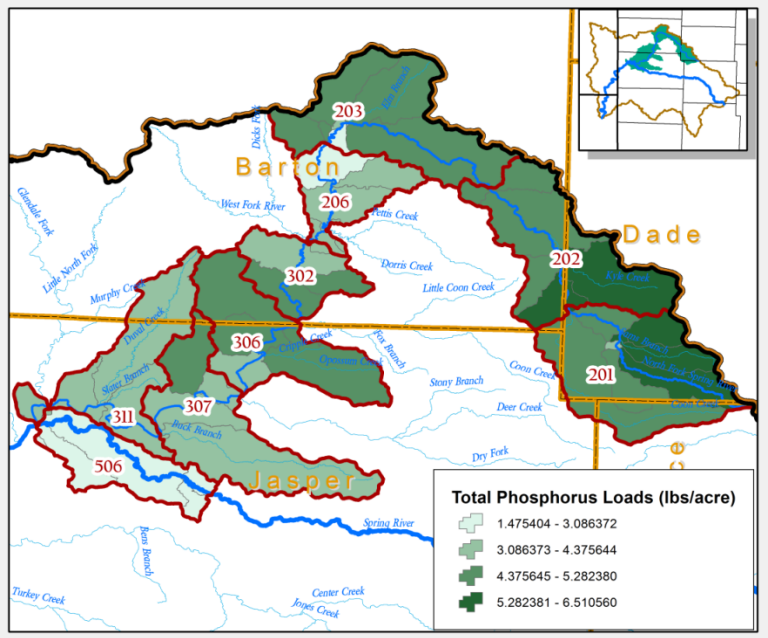

Figure 90. North Fork Spring River Phosphorus Loads

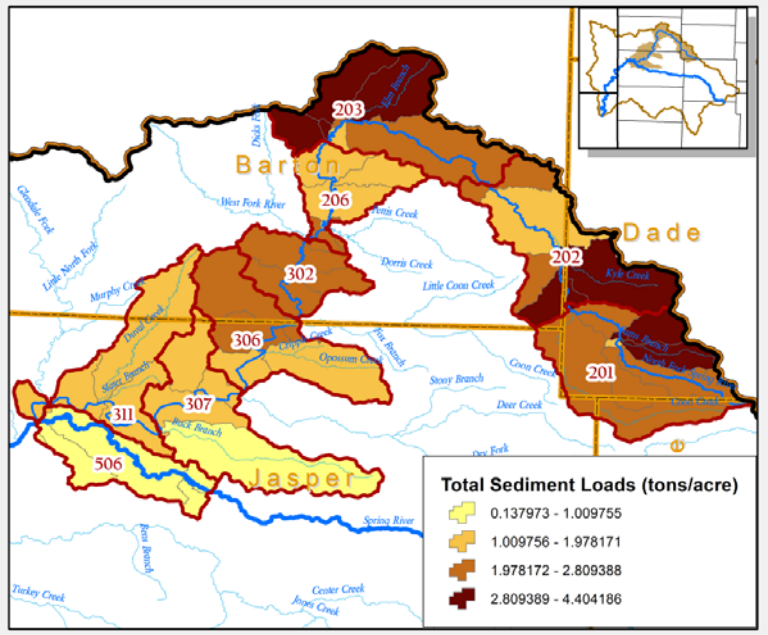

Figure 91. North Fork Spring River Sediment Loads

2) Lamar Lake Watershed

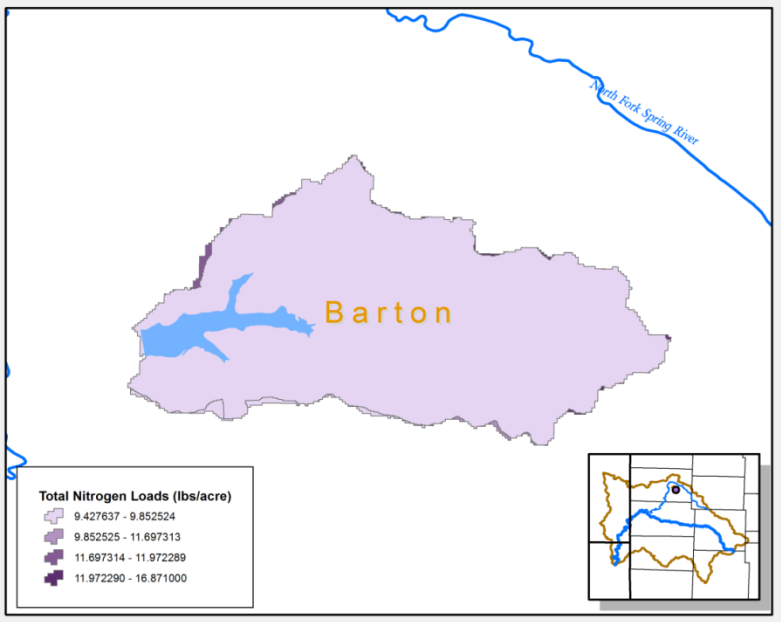

Figure 92. Lamar Lake Watershed Nitrogen Loads

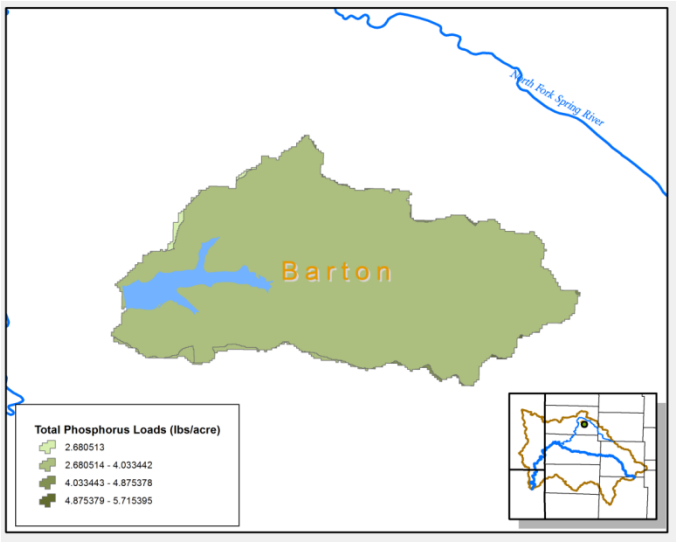

Figure 93. Lamar Lake Watershed Phosphorus Loads

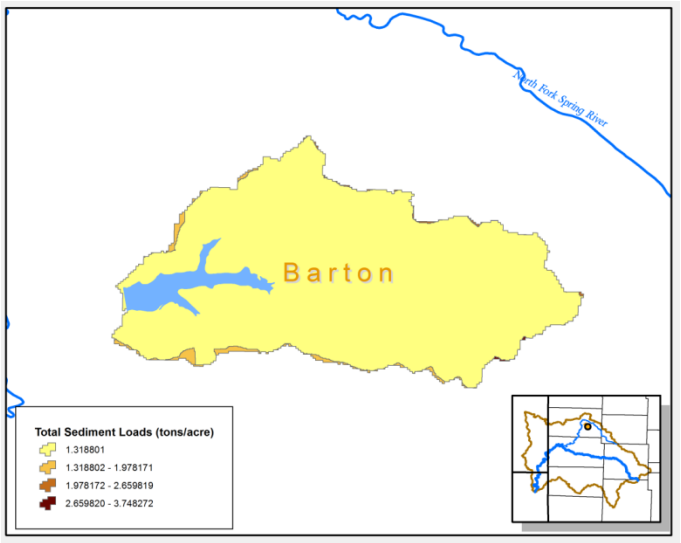

Figure 94. Lamar Lake Watershed Sediment Loads

3) Baynham Branch Watershed

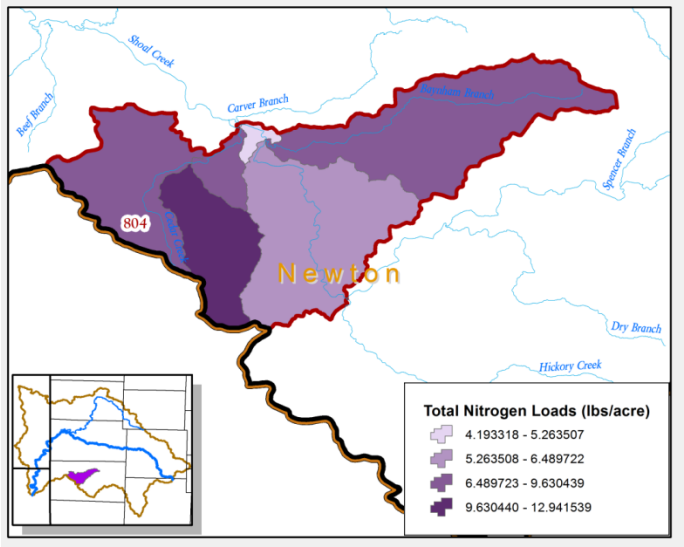

Figure 95. Baynham Branch Watershed Nitrogen Loads

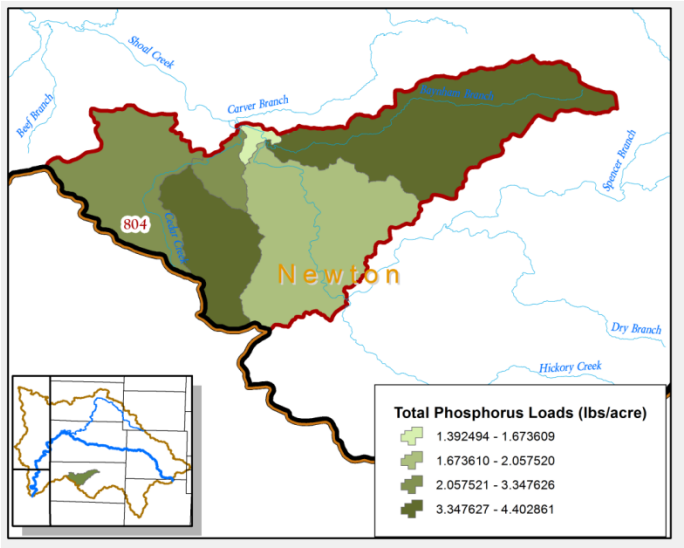

Figure 96. Baynham Branch Watershed Phosphorus Loads

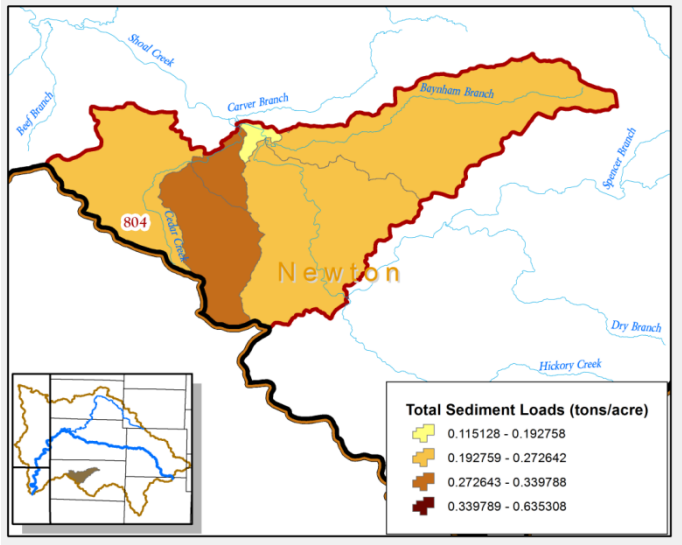

Figure 97. Baynham Branch Watershed Sediment Loads

4) Capps Creek Watershed

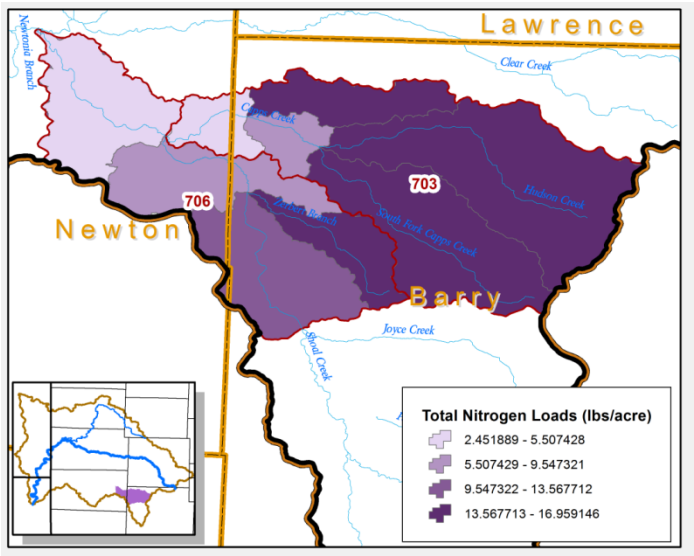

Figure 98. Capps Creek Watershed Nitrogen Loads

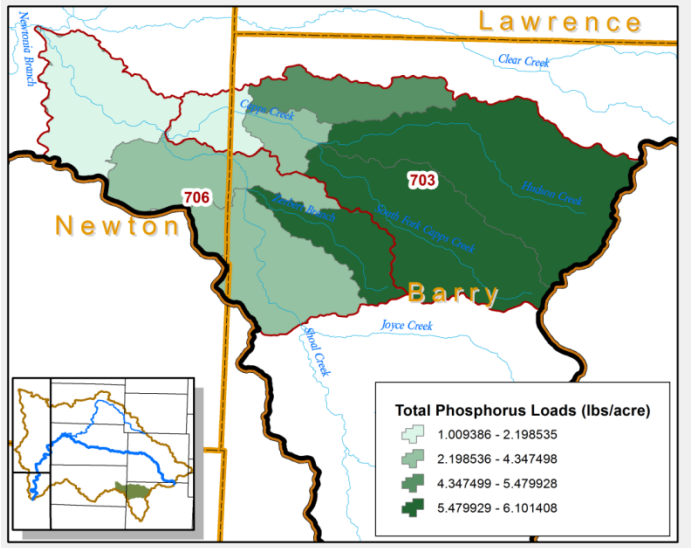

Figure 99. Capps Creek Watershed Phosphorus Loads

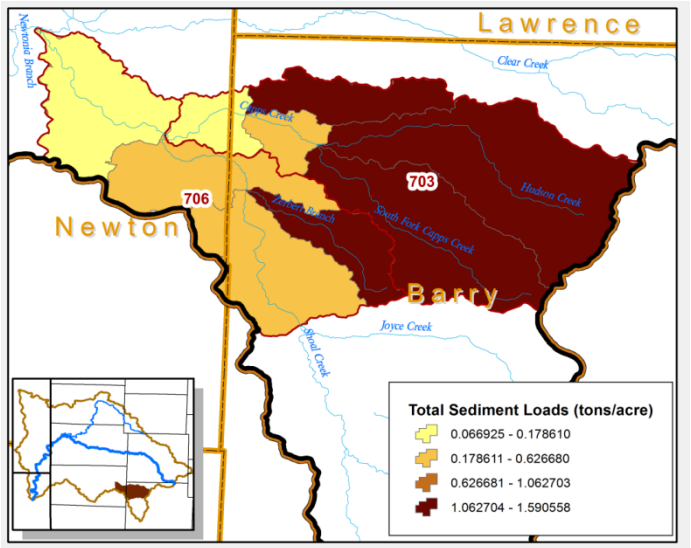

Figure 100. Capps Creek Watershed Sediment Loads

5) Center Creek Watershed

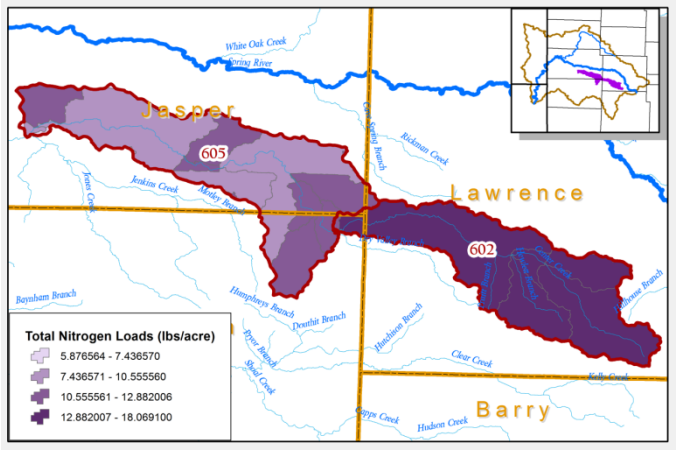

Figure 101. Center Creek Nitrogen Loads

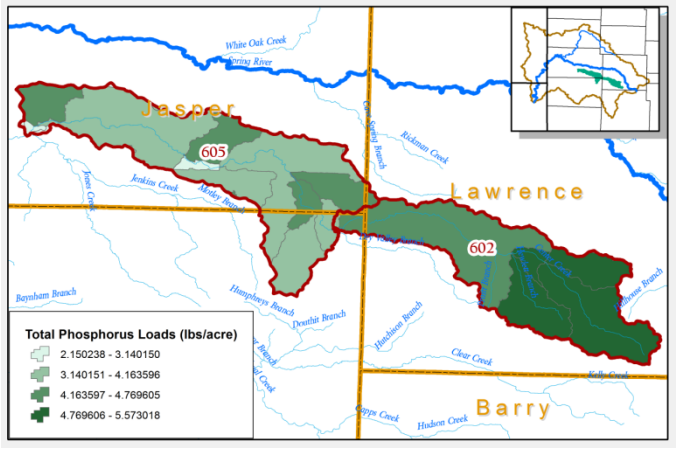

Figure 102. Center Creek Phosphorus Loads

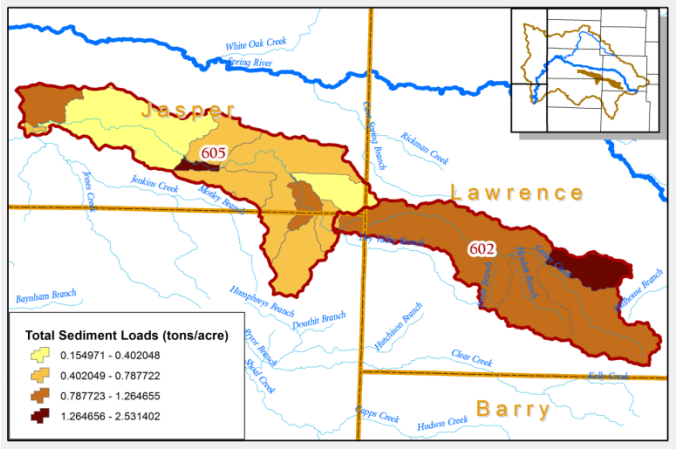

Figure 103. Center Creek Sediment Loads

6) Clear Creek Watershed

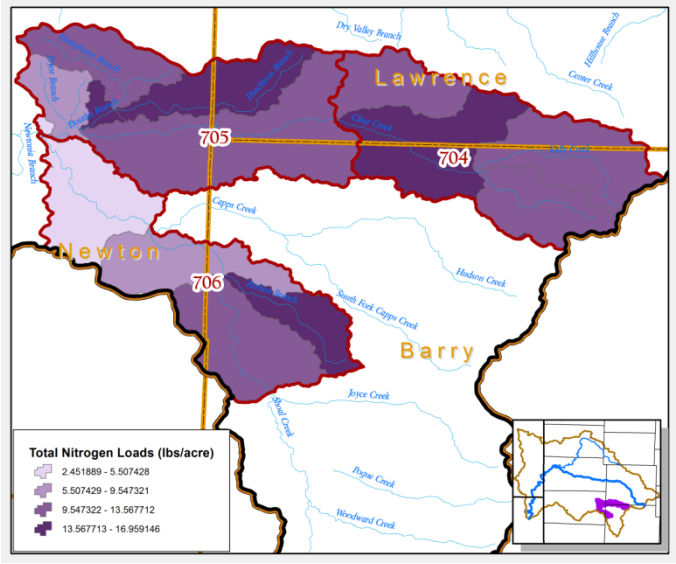

Figure 104. Clear Creek Nitrogen Loads

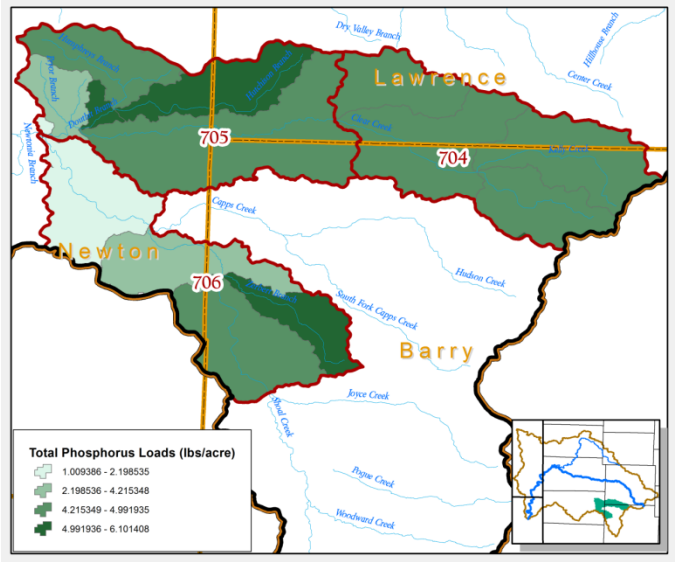

Figure 105. Clear Creek Phosphorus Loads

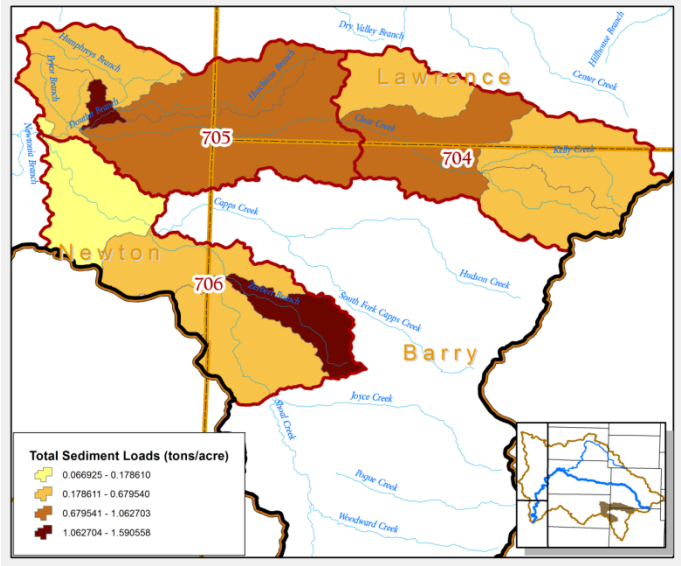

Figure 106. Clear Creek Sediment Loads

7) Dry Fork Watershed

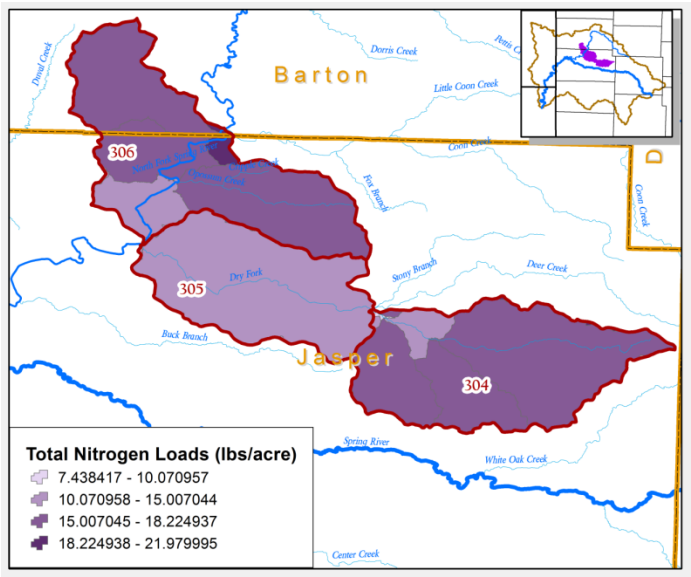

Figure 107. Dry Fork Watershed Nitrogen Loads

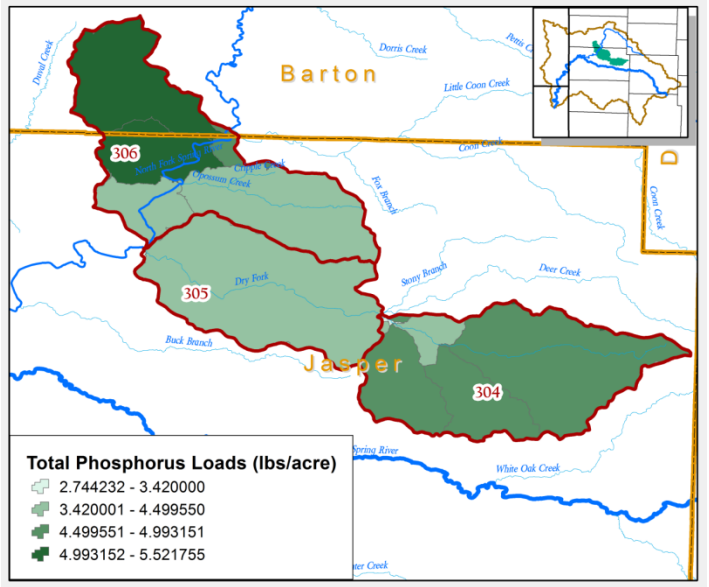

Figure 108. Dry Fork Phosphorus Loads

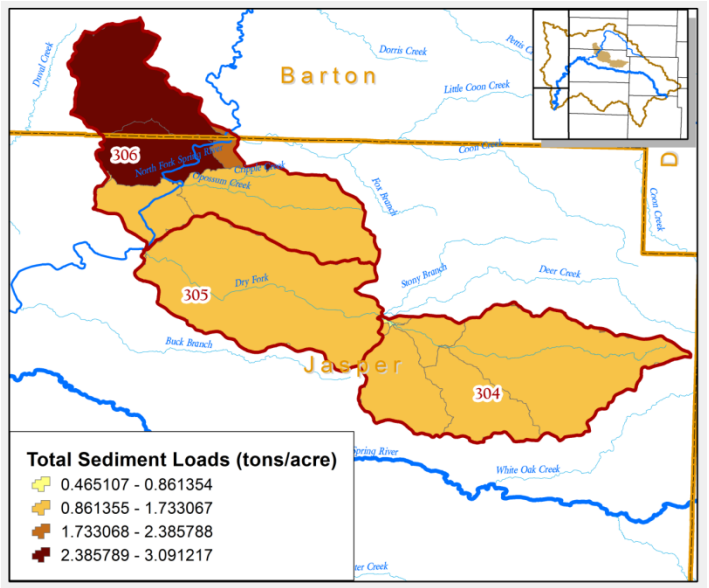

Figure 109. Dry Fork Sediment Loads

8) Hickory Creek Watershed

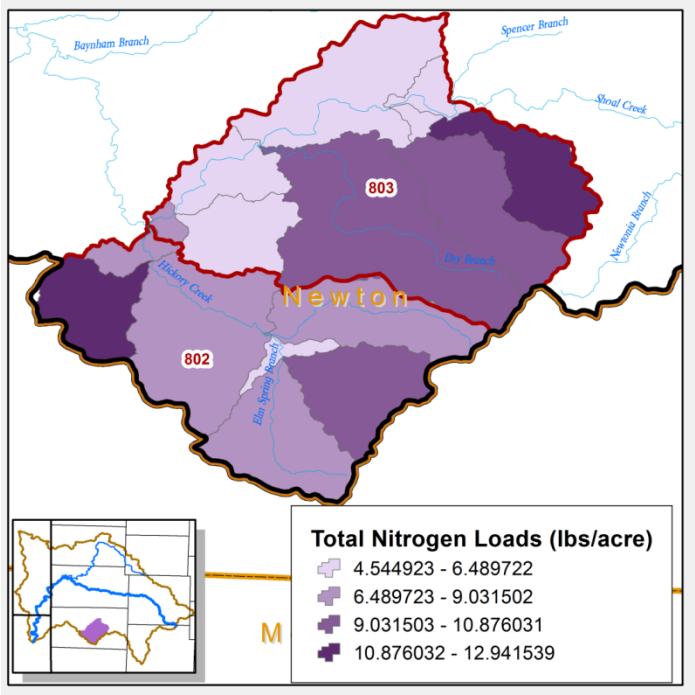

Figure 110. Hickory Creek Watershed Nitrogen Loads

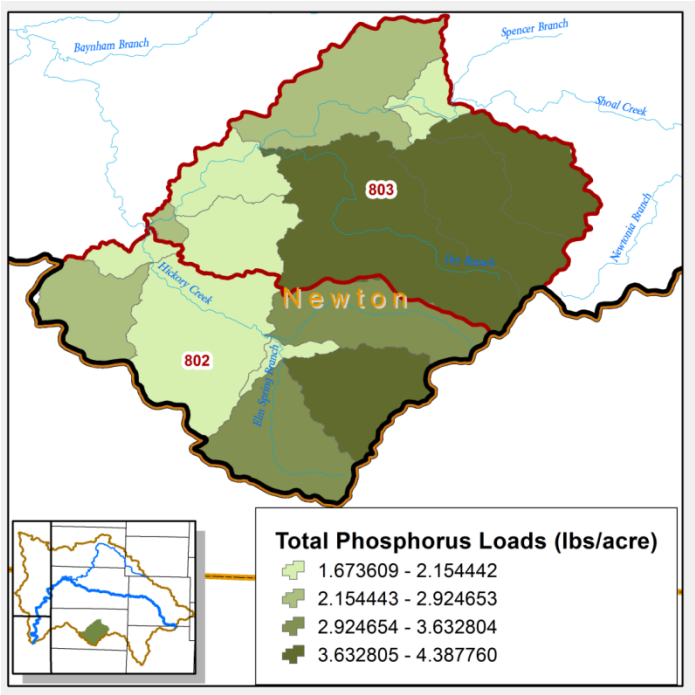

Figure 111. Hickory Creek Watershed Phosphorus Loads

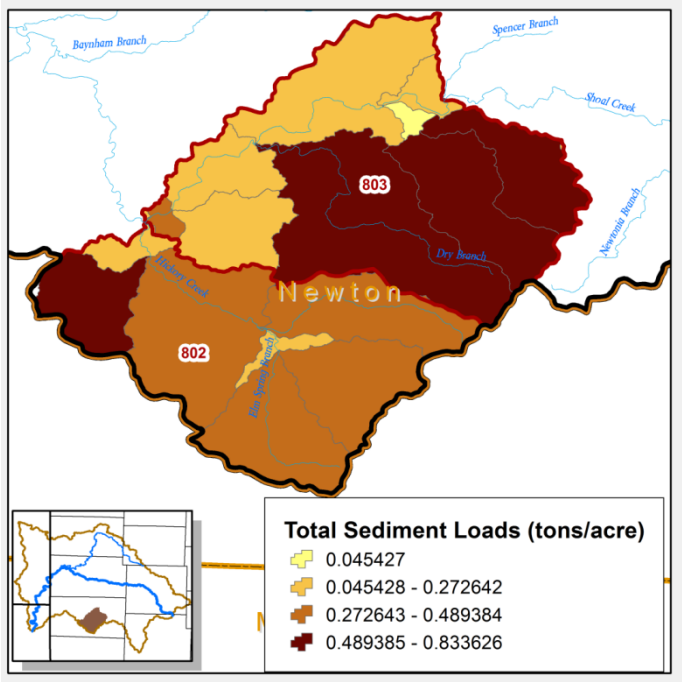

Figure 112. Hickory Creek Watershed Sediment Loads

9) Honey Creek Watershed

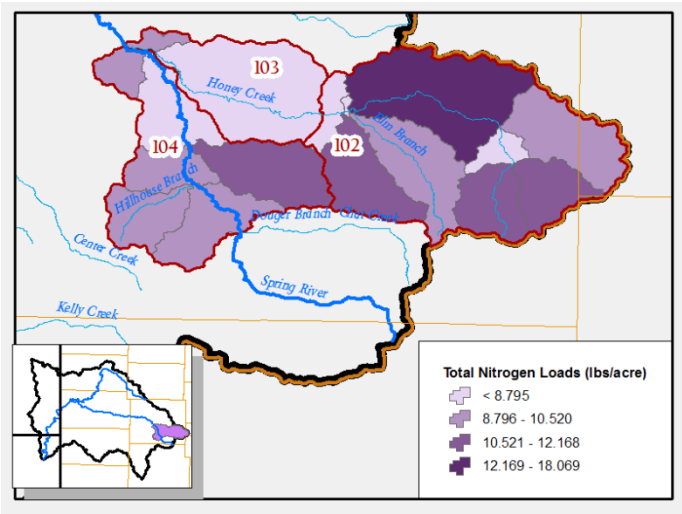

Figure 113. Honey Creek Watershed Nitrogen Loads

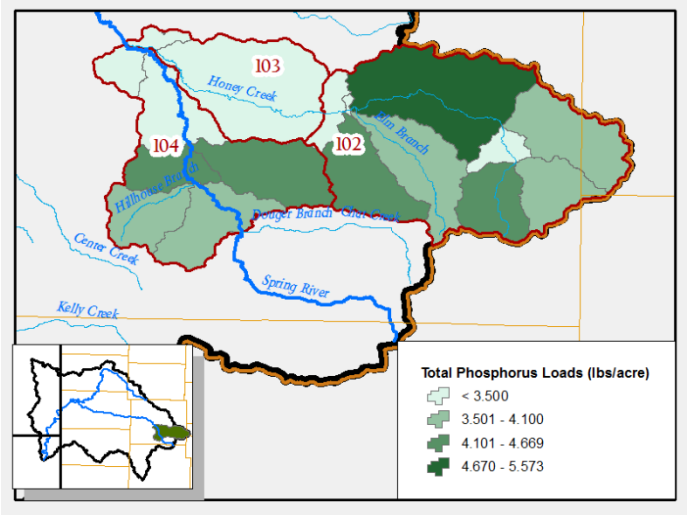

Figure 114. Honey Creek Watershed Phosphorus Loads

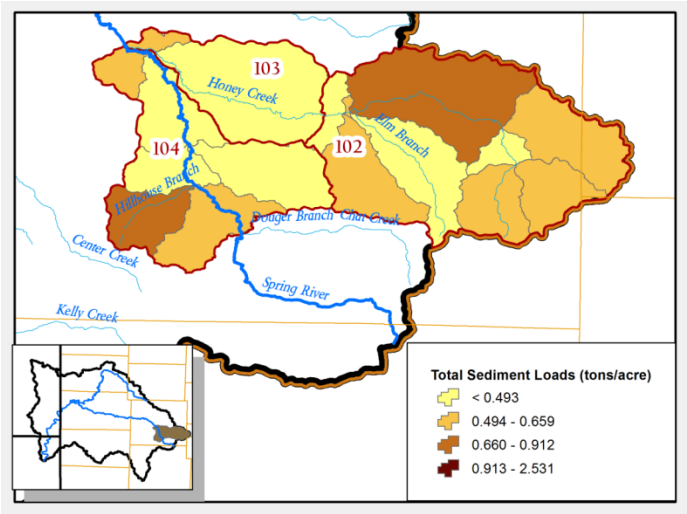

Figure 115. Honey Creek Watershed Sediment Loads

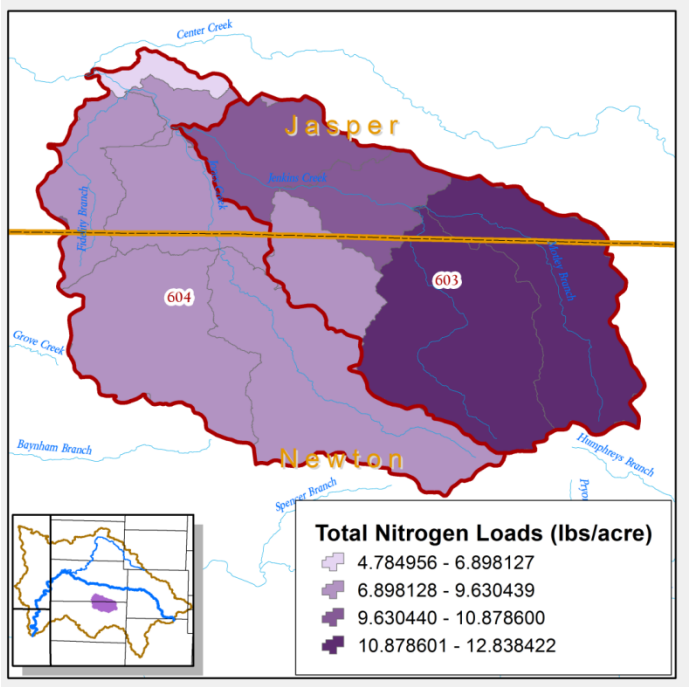

Figure 116. Jenkins Creek Watershed Nitrogen Loads

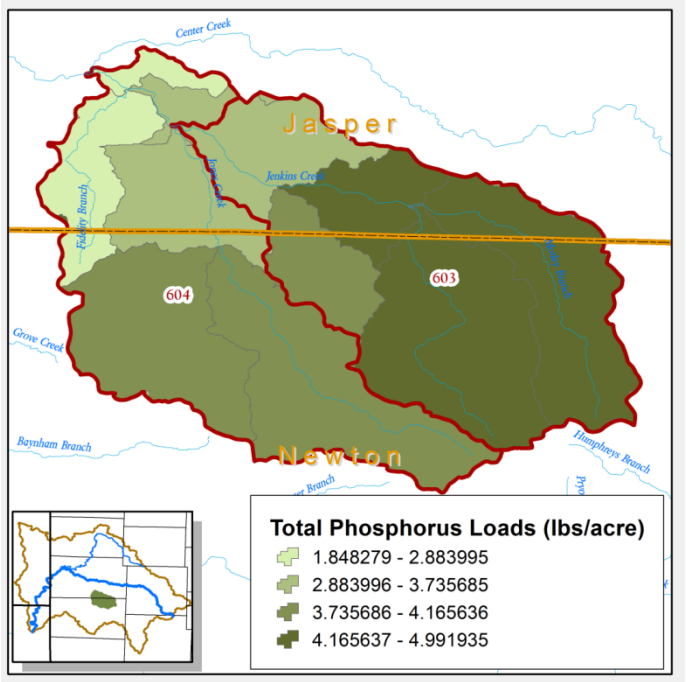

Figure 117. Jenkins Creek Watershed Phosphorus Loads

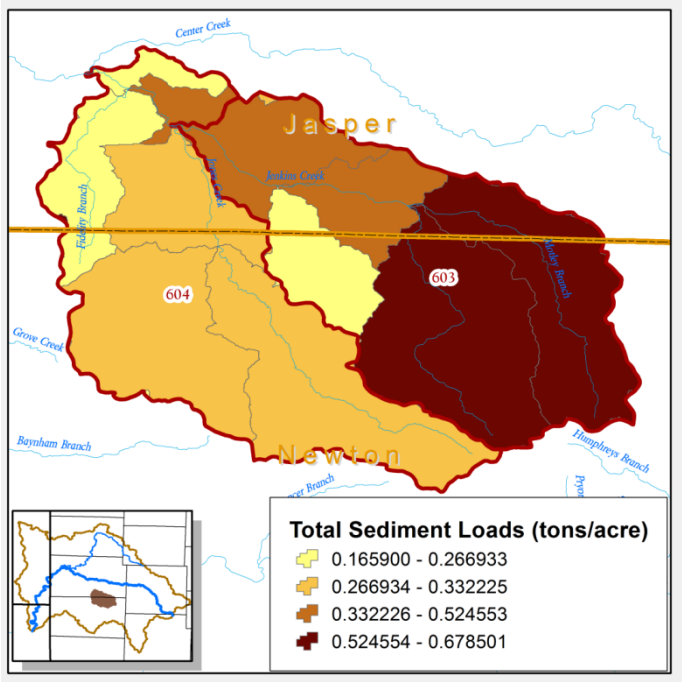

Figure 118. Jenkins Creek Watershed Sediment Loads

10) Jones Creek Watershed

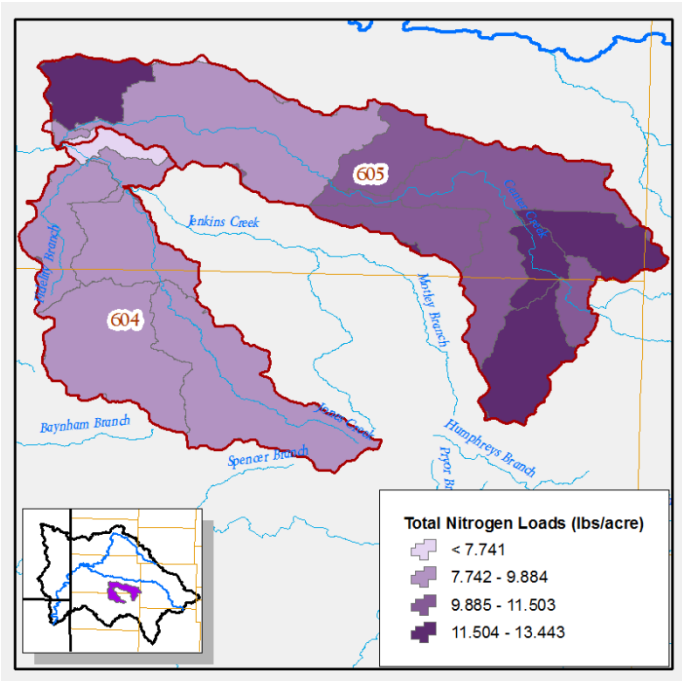

Figure 119. Jones Creek Watershed Nitrogen Loads

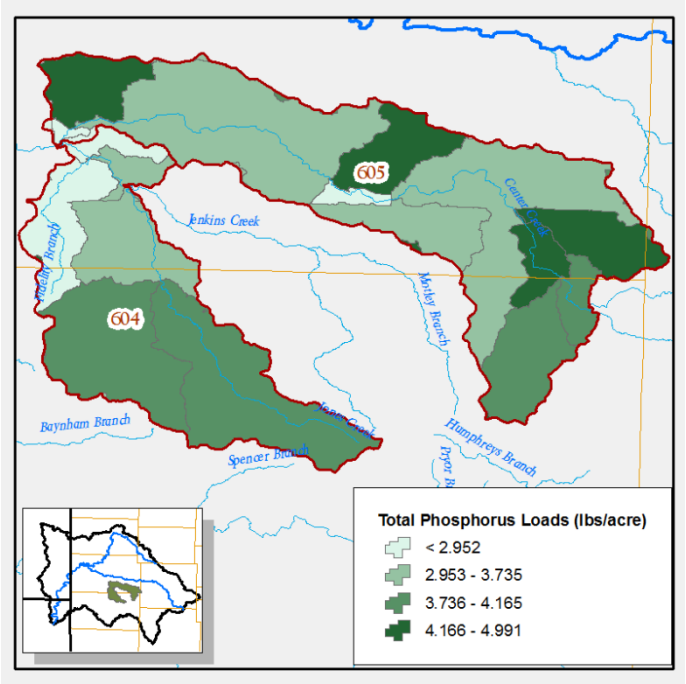

Figure 120. Jones Creek Watershed Phosphorus Loads

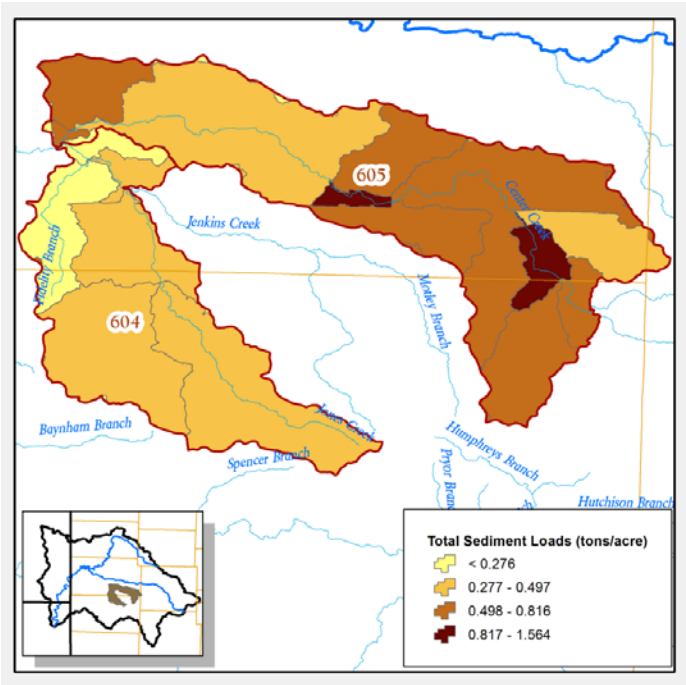

Figure 121. Jones Creek Watershed Sediment Loads

11) Shoal, Pogue and Joyce Creeks Watershed

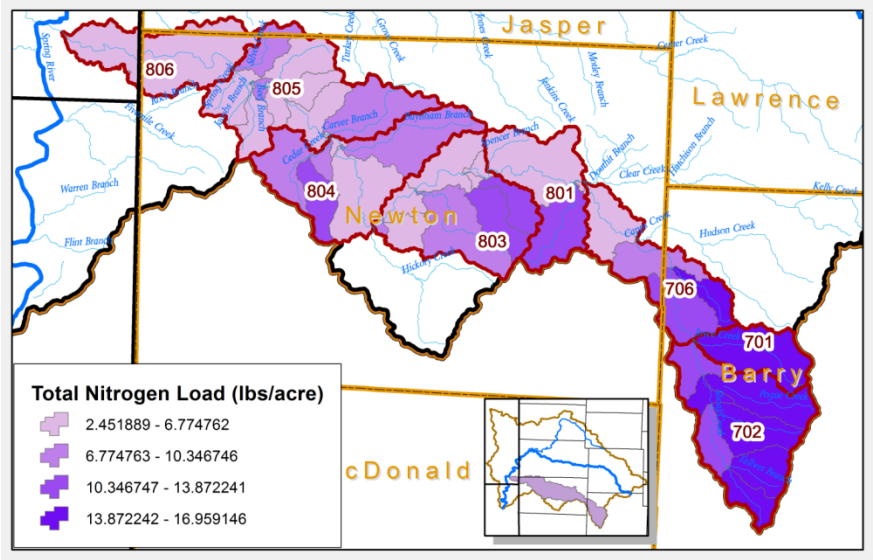

Figure 122. Shoal, Pogue and Joyce Creek Watersheds Nitrogen Loads

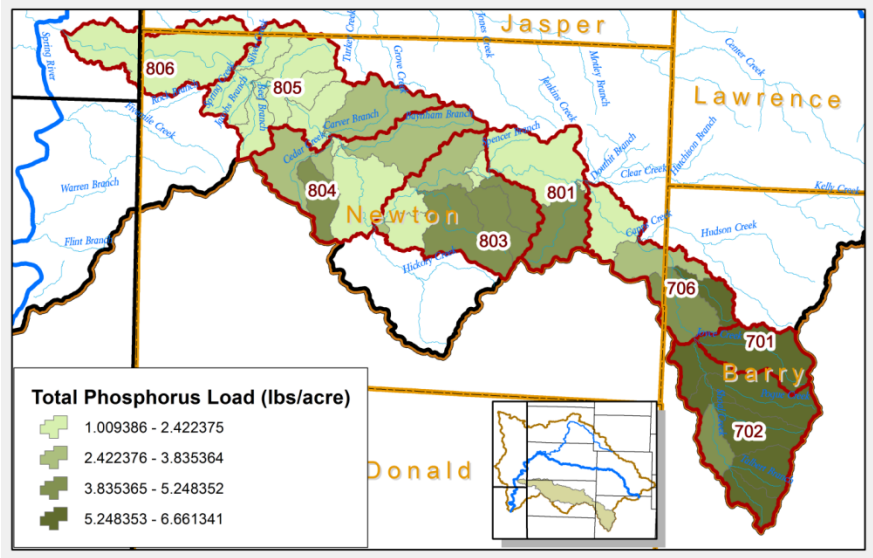

Figure 123. Shoal, Pogue and Joyce Creek Watersheds Phosphorus Loads

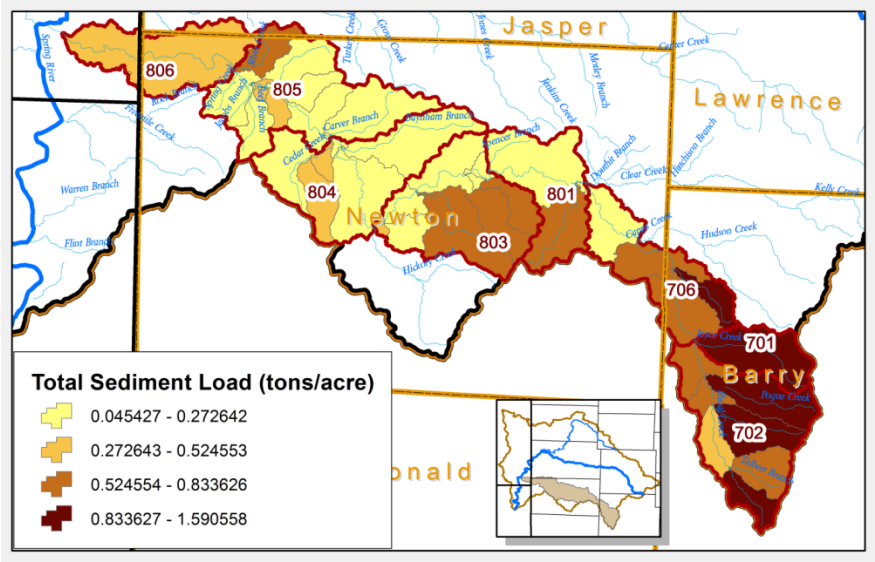

Figure 124. Shoal, Pogue and Joyce Creek Watersheds Sediment Loads

12) Spring River Watershed

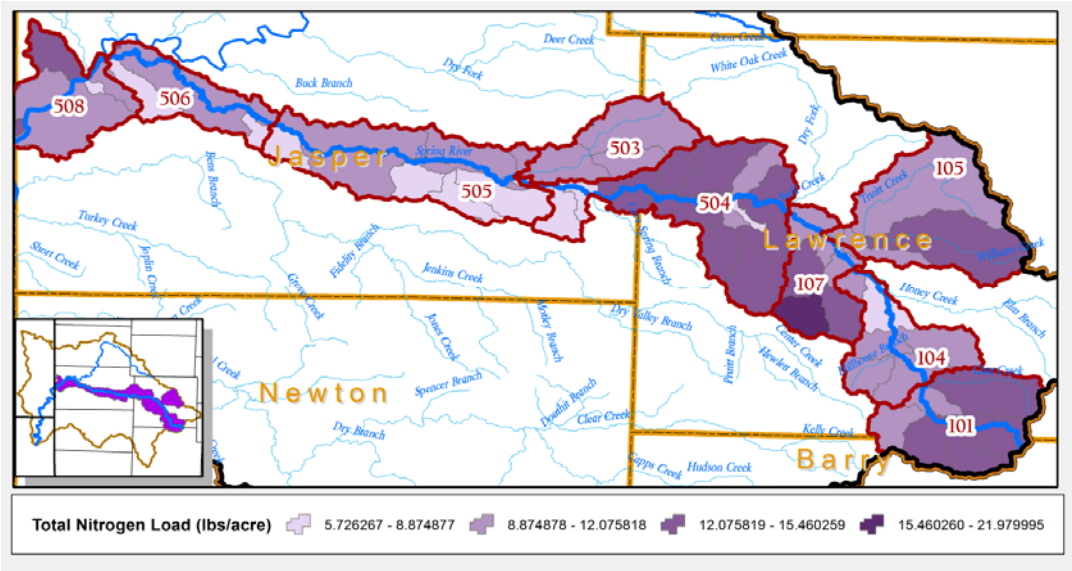

Figure 125. Spring River Watershed Nitrogen Loads

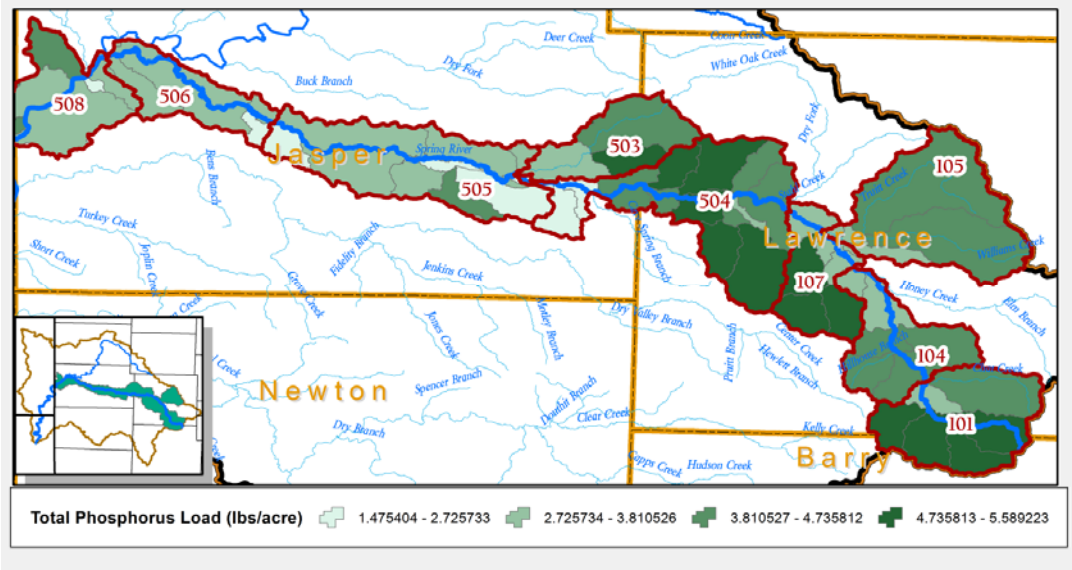

Figure 126. Spring River Watershed Phosphorus Loads

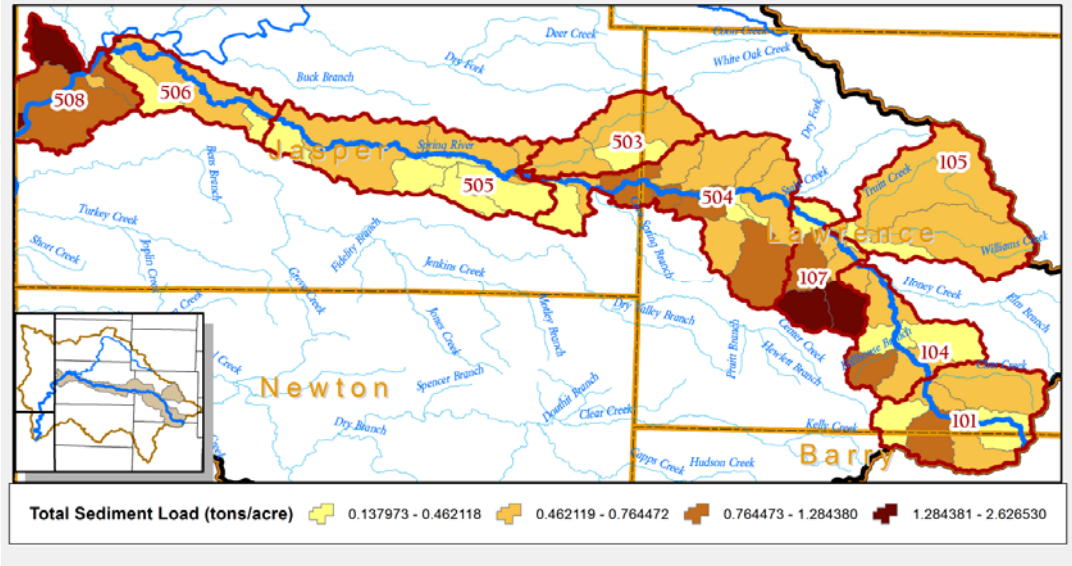

Figure 127. Spring River Watershed Sediment Loads

13) Thurman Creek Watershed

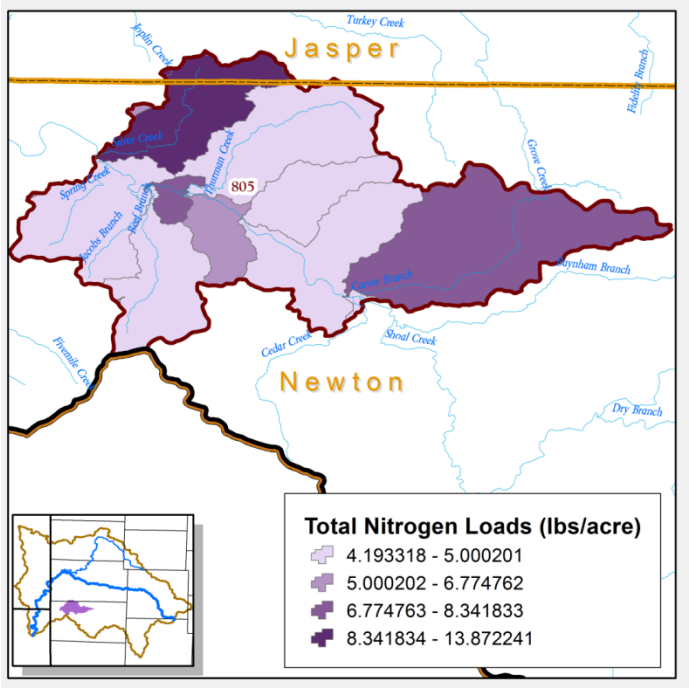

Figure 128. Thurman Creek Watershed Nitrogen Loads

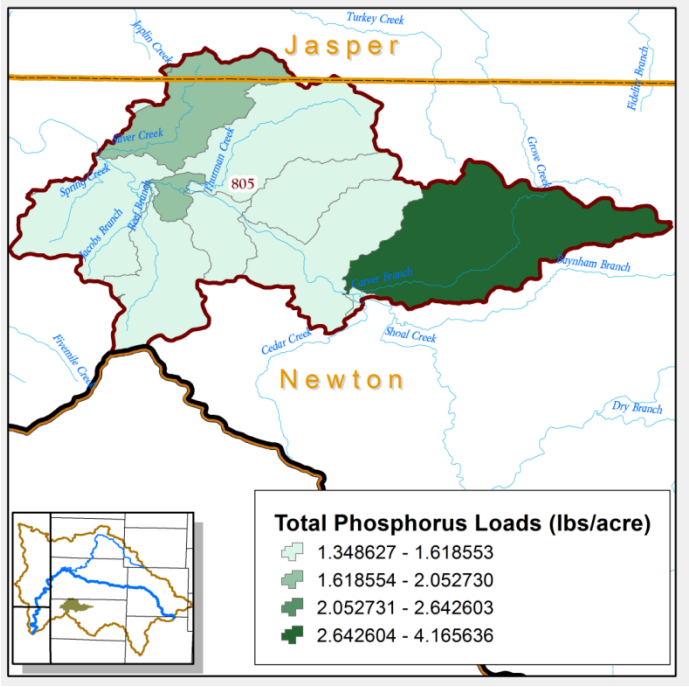

Figure 129. Thurman Creek Watershed Phosphorus Loads

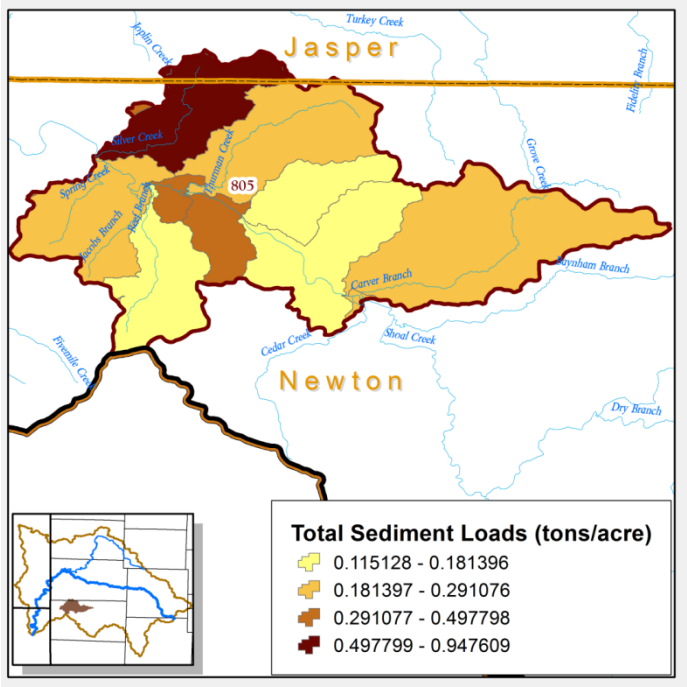

Figure 130. Thurman Creek Watershed Sediment Loads

14) Truitt Creek Watershed

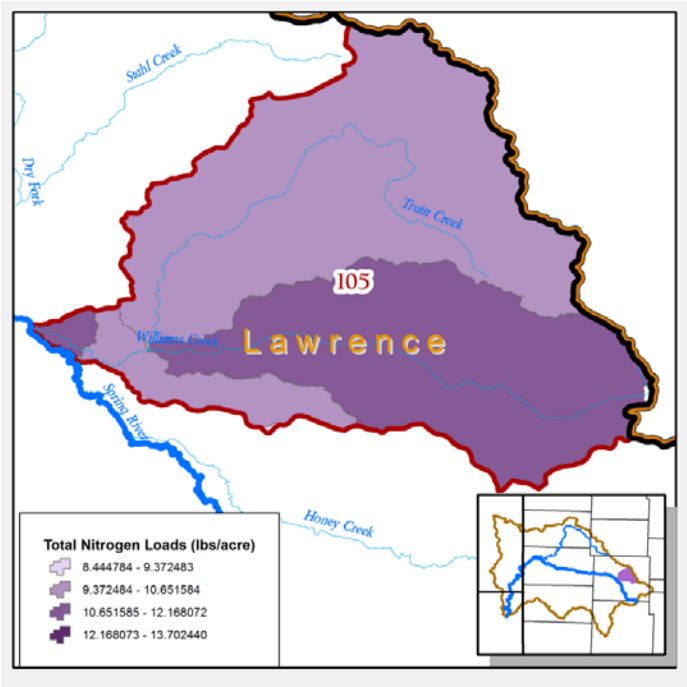

Figure 131. Truitt Creek Watershed Nitrogen Loads

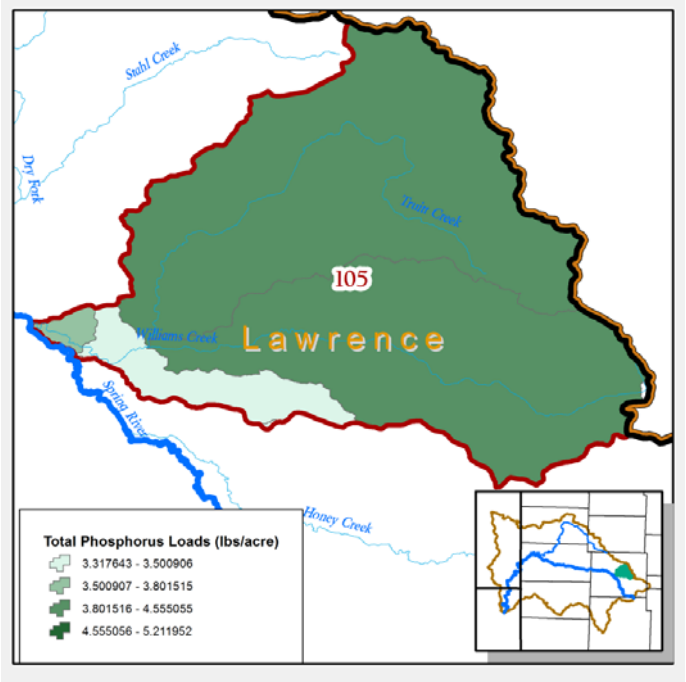

Figure 132. Truitt Creek Watershed Phosphorus Loads

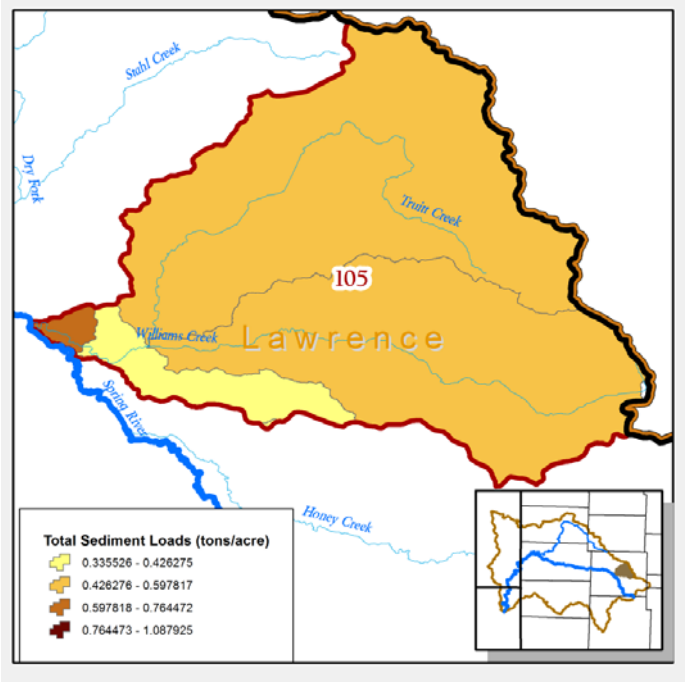

Figure 133. Truitt Creek Watershed Sediment Loads

15) Turkey Creek Watershed

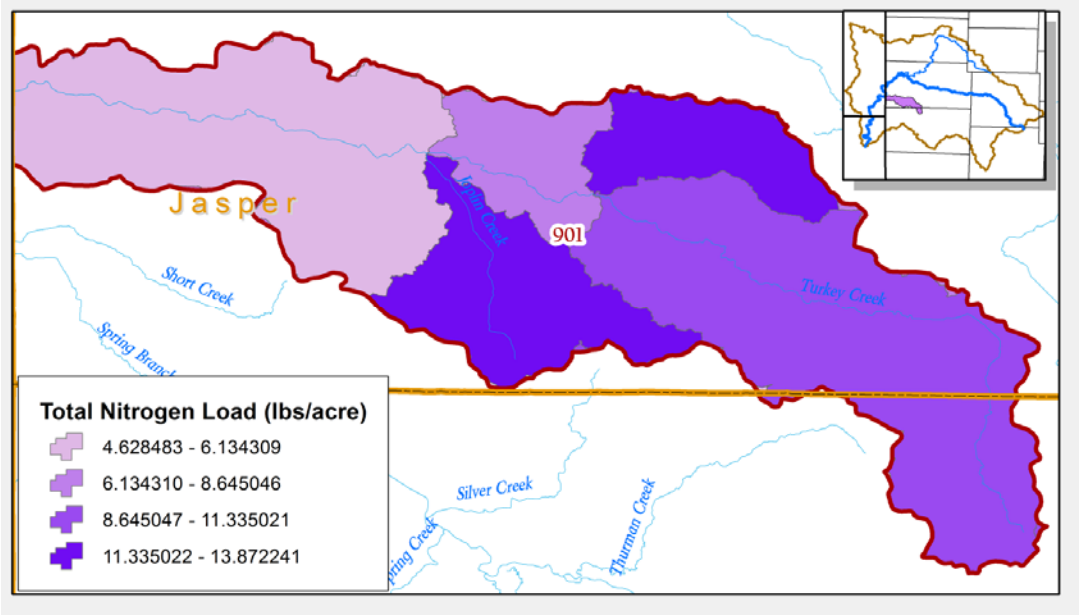

Figure 134. Turkey Creek Watershed Nitrogen Loads

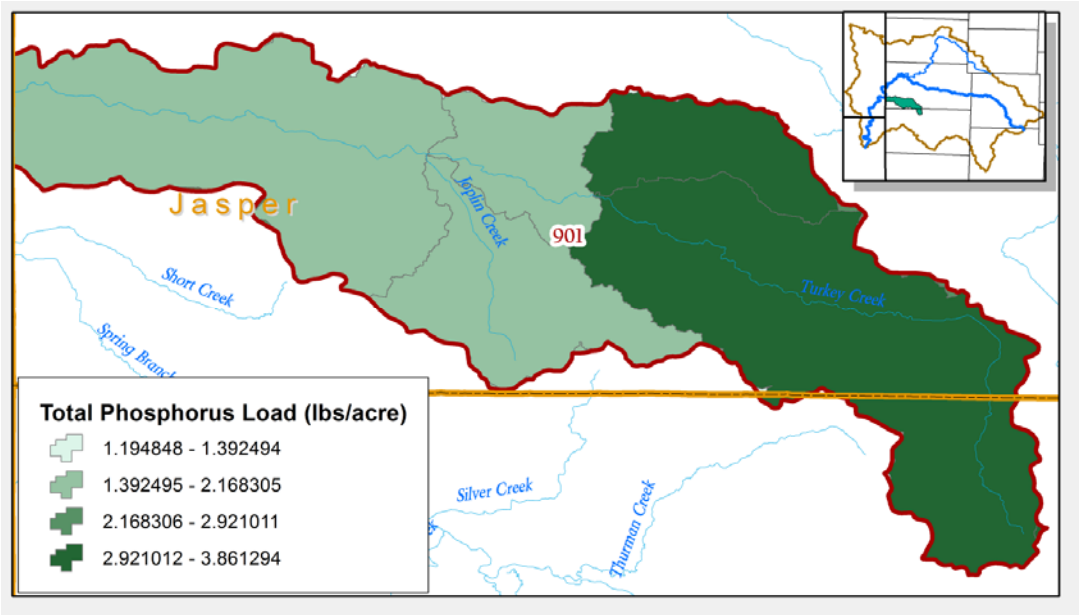

Figure 135. Turkey Creek Watershed Phosphorus Loads

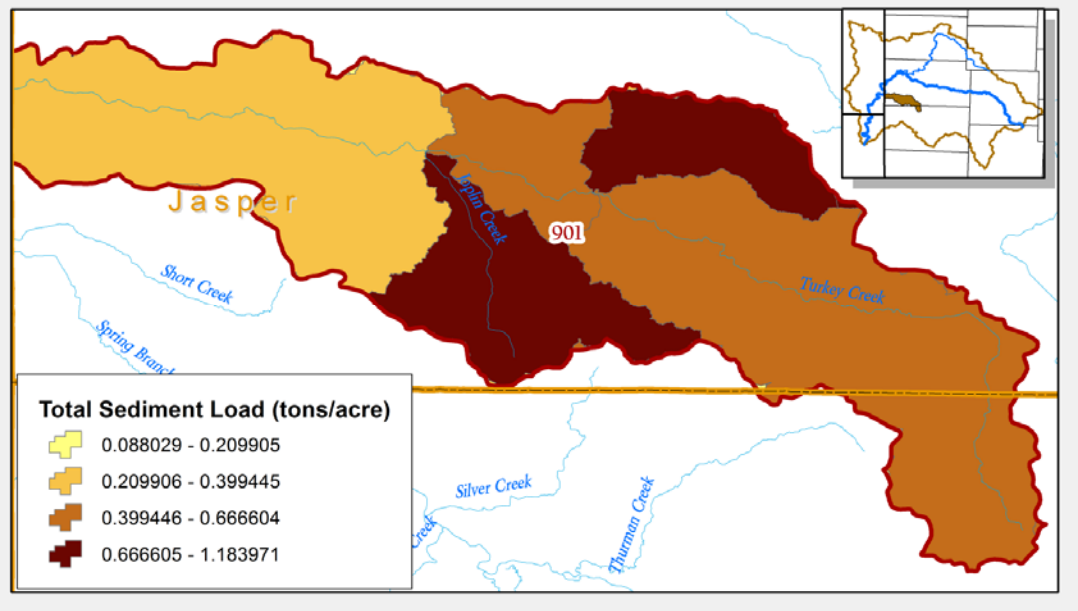

Figure 136. Turkey Creek Watershed Sediment Loads

16) White Oak Creek Watershed

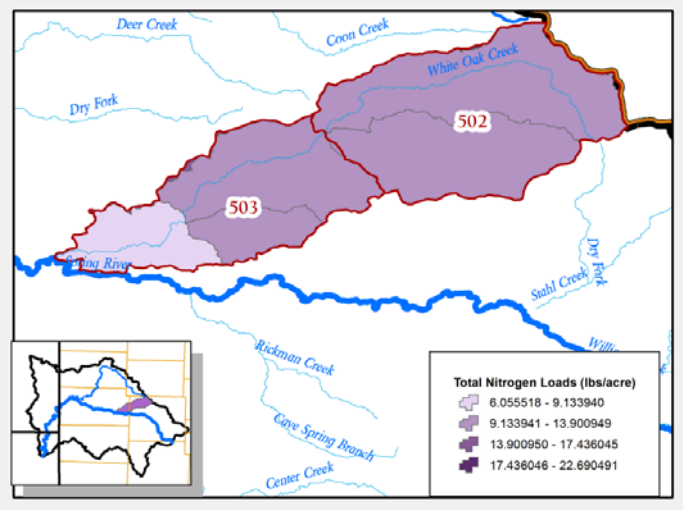

Figure 137. White Oak Creek Watershed Nitrogen Loads

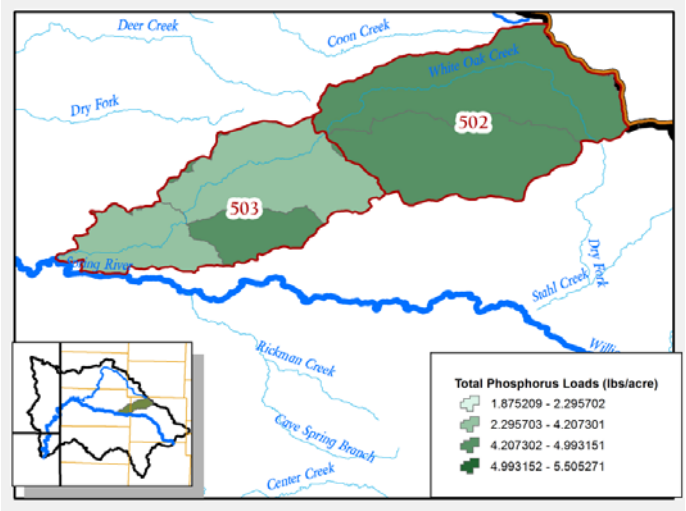

Figure 138. White Oak Creek Watershed Phosphorus Loads

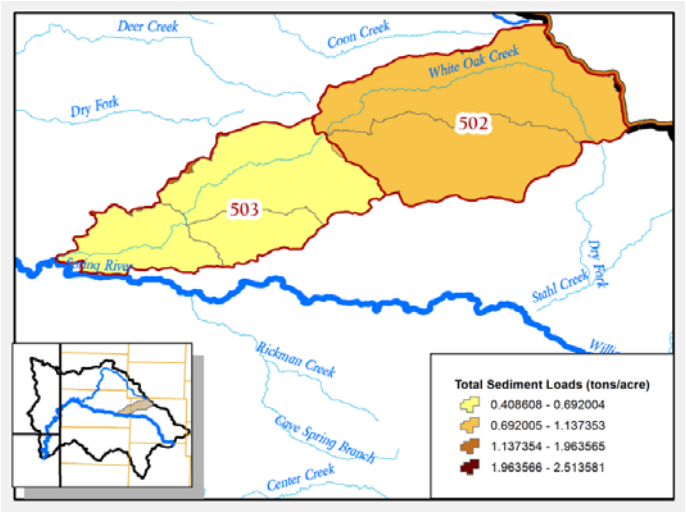

Figure 139. White Oak Creek Watershed Sediment Loads

17) Williams Creek Watershed

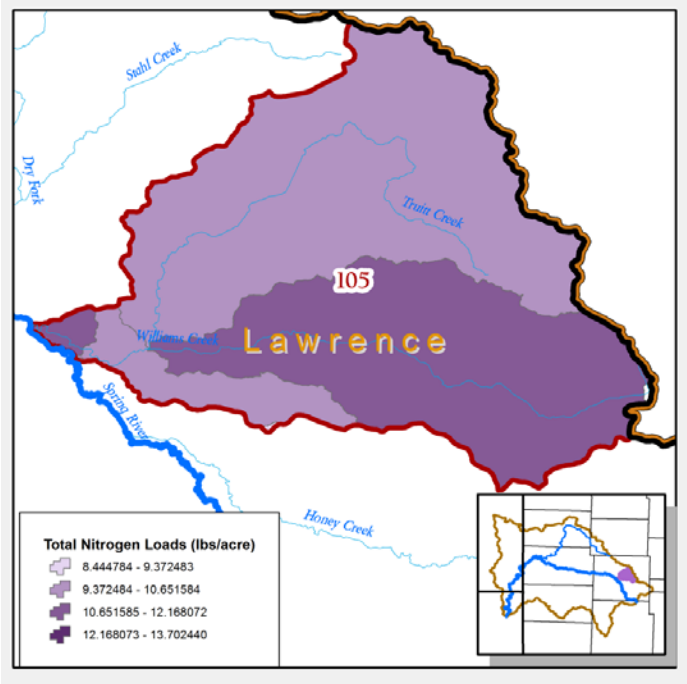

Figure 140. Williams Creek Watershed Nitrogen Loads

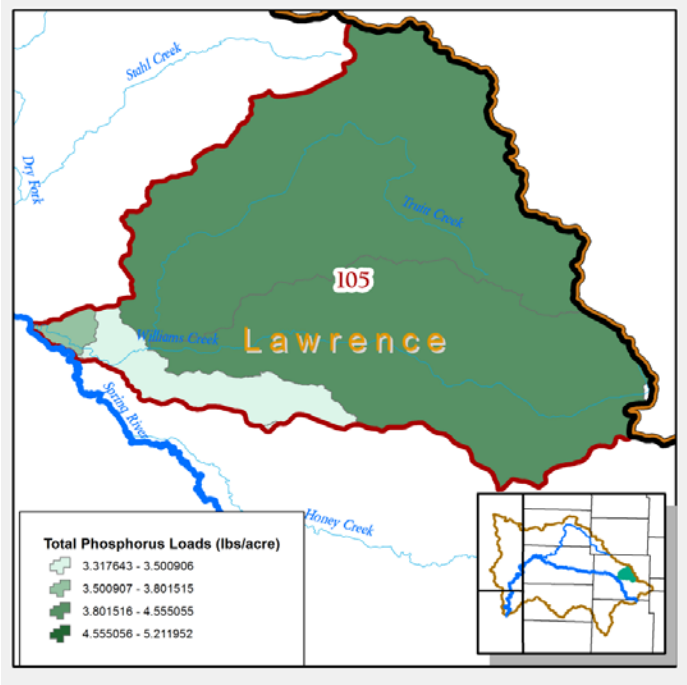

Figure 141. Williams Creek Watershed Phosphorus Loads

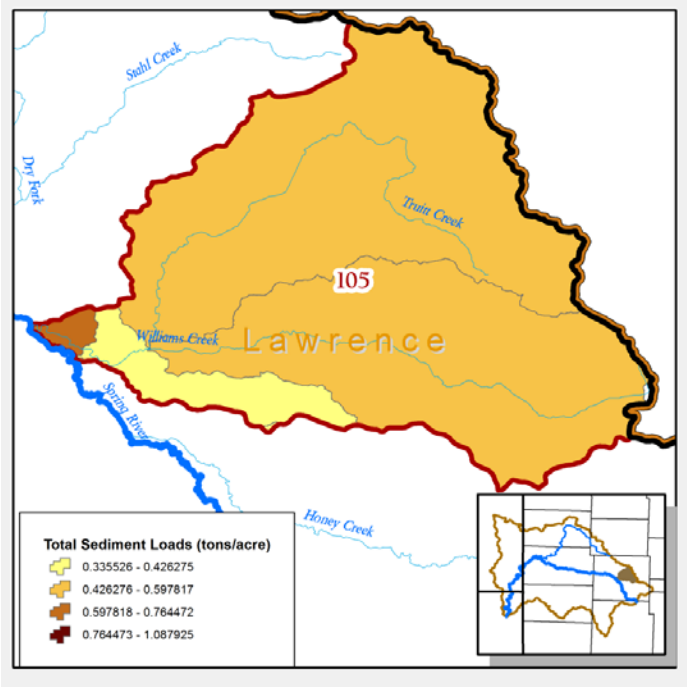

Figure 142. Williams Creek Watershed Sediment Loads

B Adoption Rates by HUC 12

Table 278. Cropland Adoption Rates by HUC 12.

Sub Watershed #804 Baynham Creek Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	25	25	25	25	25	25	25	25	201
2	25	25	25	25	25	25	25	25	201
3	25	25	25	25	25	25	25	25	201
4	25	25	25	25	25	25	25	25	201
5	25	25	25	25	25	25	25	25	201
6	25	25	25	25	25	25	25	25	201
7	25	25	25	25	25	25	25	25	201
8	25	25	25	25	25	25	25	25	201
9	25	25	25	25	25	25	25	25	201
10	25	25	25	25	25	25	25	25	201
11	25	25	25	25	25	25	25	25	201
12	25	25	25	25	25	25	25	25	201
13	25	25	25	25	25	25	25	25	201
14	25	25	25	25	25	25	25	25	201
15	25	25	25	25	25	25	25	25	201

16	25	25	25	25	25	25	25	25	201
17	25	25	25	25	25	25	25	25	201
18	25	25	25	25	25	25	25	25	201
19	25	25	25	25	25	25	25	25	201
20	25	25	25	25	25	25	25	25	201
Sub Watershed #703 Capps Creek Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	21	21	21	21	21	21	21	21	167
2	21	21	21	21	21	21	21	21	167
3	21	21	21	21	21	21	21	21	167
4	21	21	21	21	21	21	21	21	167
5	21	21	21	21	21	21	21	21	167
6	21	21	21	21	21	21	21	21	167
7	21	21	21	21	21	21	21	21	167
8	21	21	21	21	21	21	21	21	167
9	21	21	21	21	21	21	21	21	167
10	21	21	21	21	21	21	21	21	167
11	21	21	21	21	21	21	21	21	167
12	21	21	21	21	21	21	21	21	167
13	21	21	21	21	21	21	21	21	167
14	21	21	21	21	21	21	21	21	167
15	21	21	21	21	21	21	21	21	167
16	21	21	21	21	21	21	21	21	167
17	21	21	21	21	21	21	21	21	167
18	21	21	21	21	21	21	21	21	167
19	21	21	21	21	21	21	21	21	167
20	21	21	21	21	21	21	21	21	167
Sub Watershed #601 Center Creek Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	46	46	46	46	46	46	46	46	371
2	46	46	46	46	46	46	46	46	371
3	46	46	46	46	46	46	46	46	371
4	46	46	46	46	46	46	46	46	371
5	46	46	46	46	46	46	46	46	371

6	46	46	46	46	46	46	46	46	371
7	46	46	46	46	46	46	46	46	371
8	46	46	46	46	46	46	46	46	371
9	46	46	46	46	46	46	46	46	371
10	46	46	46	46	46	46	46	46	371
11	46	46	46	46	46	46	46	46	371
12	46	46	46	46	46	46	46	46	371
13	46	46	46	46	46	46	46	46	371
14	46	46	46	46	46	46	46	46	371
15	46	46	46	46	46	46	46	46	371
16	46	46	46	46	46	46	46	46	371
17	46	46	46	46	46	46	46	46	371
18	46	46	46	46	46	46	46	46	371
19	46	46	46	46	46	46	46	46	371
20	46	46	46	46	46	46	46	46	371
Sub Watershed #704 Clear Creek Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	5	5	5	5	5	5	5	5	40
2	5	5	5	5	5	5	5	5	40
3	5	5	5	5	5	5	5	5	40
4	5	5	5	5	5	5	5	5	40
5	5	5	5	5	5	5	5	5	40
6	5	5	5	5	5	5	5	5	40
7	5	5	5	5	5	5	5	5	40
8	5	5	5	5	5	5	5	5	40
9	5	5	5	5	5	5	5	5	40
10	5	5	5	5	5	5	5	5	40
11	5	5	5	5	5	5	5	5	40
12	5	5	5	5	5	5	5	5	40
13	5	5	5	5	5	5	5	5	40
14	5	5	5	5	5	5	5	5	40
15	5	5	5	5	5	5	5	5	40
16	5	5	5	5	5	5	5	5	40
17	5	5	5	5	5	5	5	5	40
18	5	5	5	5	5	5	5	5	40
19	5	5	5	5	5	5	5	5	40
20	5	5	5	5	5	5	5	5	40

Sub Watershed #705 Clear Creek Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	6	6	6	6	6	6	6	6	45
2	6	6	6	6	6	6	6	6	45
3	6	6	6	6	6	6	6	6	45
4	6	6	6	6	6	6	6	6	45
5	6	6	6	6	6	6	6	6	45
6	6	6	6	6	6	6	6	6	45
7	6	6	6	6	6	6	6	6	45
8	6	6	6	6	6	6	6	6	45
9	6	6	6	6	6	6	6	6	45
10	6	6	6	6	6	6	6	6	45
11	6	6	6	6	6	6	6	6	45
12	6	6	6	6	6	6	6	6	45
13	6	6	6	6	6	6	6	6	45
14	6	6	6	6	6	6	6	6	45
15	6	6	6	6	6	6	6	6	45
16	6	6	6	6	6	6	6	6	45
17	6	6	6	6	6	6	6	6	45
18	6	6	6	6	6	6	6	6	45
19	6	6	6	6	6	6	6	6	45
20	6	6	6	6	6	6	6	6	45
Sub Watershed #304 Dry Fork Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	43	43	43	43	43	43	43	43	346
2	43	43	43	43	43	43	43	43	346
3	43	43	43	43	43	43	43	43	346
4	43	43	43	43	43	43	43	43	346
5	43	43	43	43	43	43	43	43	346
6	43	43	43	43	43	43	43	43	346
7	43	43	43	43	43	43	43	43	346
8	43	43	43	43	43	43	43	43	346
9	43	43	43	43	43	43	43	43	346
10	43	43	43	43	43	43	43	43	346

11	43	43	43	43	43	43	43	43	346
12	43	43	43	43	43	43	43	43	346
13	43	43	43	43	43	43	43	43	346
14	43	43	43	43	43	43	43	43	346
15	43	43	43	43	43	43	43	43	346
16	43	43	43	43	43	43	43	43	346
17	43	43	43	43	43	43	43	43	346
18	43	43	43	43	43	43	43	43	346
19	43	43	43	43	43	43	43	43	346
20	43	43	43	43	43	43	43	43	346
Sub Watershed #305 Dry Fork Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**
1	44	44	44	44	44	44	44	44	354
2	44	44	44	44	44	44	44	44	354
3	44	44	44	44	44	44	44	44	354
4	44	44	44	44	44	44	44	44	354
5	44	44	44	44	44	44	44	44	354
6	44	44	44	44	44	44	44	44	354
7	44	44	44	44	44	44	44	44	354
8	44	44	44	44	44	44	44	44	354
9	44	44	44	44	44	44	44	44	354
10	44	44	44	44	44	44	44	44	354
11	44	44	44	44	44	44	44	44	354
12	44	44	44	44	44	44	44	44	354
13	44	44	44	44	44	44	44	44	354
14	44	44	44	44	44	44	44	44	354
15	44	44	44	44	44	44	44	44	354
16	44	44	44	44	44	44	44	44	354
17	44	44	44	44	44	44	44	44	354
18	44	44	44	44	44	44	44	44	354
19	44	44	44	44	44	44	44	44	354
20	44	44	44	44	44	44	44	44	354
Sub Watershed #802 Hickory Creek Annual Adoption (treated acres), Cropland BMPs									
Year	**No-Till**	**Cover Crops**	**Nutrient Mgmt Plan**	**Cons Crop Rotation**	**Grassed Waterways**	**Terraces**	**Vegetative Buffers**	**Water Retention Structures**	**Total**