

$$A = K \times R \times C \times P \times LS$$

- Soil Loss Equation, RUSLE2 were key features that we used throughout our project.

- **List of Features or Outcomes**

- Planting Cover Crops
- Buffer Zones
- No-till or limited tillage practices
- Planting trees
- Rip-rap/Crushed Concrete dumped along river bank at weak spots

- **Value Proposition**

- The idea of our calculations that show how much cover crops and no tillage practices do for erosion puts it into perspective for a farmer to know how much they are really losing by farming the way that they do.

- **5/3/2022**

- **Agricultural Systems Management Capstone**

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UNIVERSITY



**Vollmer Family Farm:  
River Shore and Land-  
Use Management**

*"Saving the soil one  
buffer zone at a time"*



★ Designed by TownMapsUSA.com

## Problem Adressed

- Vollmer Family and the farmer who rents the land are suffering from severe soil erosion due to heavy rainfalls and river flooding. The erosion is eating away at the riverbank and they're at risk of losing valuable farmland.

## Characteristics of the Problem at Hand

- Severe soil erosion
- Loss of valuable topsoil
- Loss of nutrients (N,P,K) from erosion
- Pollution of East Fork White River from chemicals and fertilizers

## Customer

- Vollmer Family Farm
- Farmer



## Data Collection and Calculations



Figure 1: Map showing different soil types within the field and the area covered by each specific soil type.

Table 2: Field breakdown of soil types and erosion factors

Corn And Soybeans Till and No Till							
Map symbol and soil name	Pct. of map unit	Slope RV	E	Slope Lengt	Runoff	T Factor	Kf Factor
Apalona, eroded		45	9	124	High	4	0.43
Zanesville, eroded		40	9	124	High	4	0.43
Bloomfield		30	7	98	Very low	5	0.1
Birds		75	0.3	298	Negligible	5	0.43
Martinsville		90	1	200	Low	5	0.32
Moundhaven		90	1	298	Negligible	5	0.1
Pike		95	4.1	150	Low	5	0.43
Wakeland		75	0.5	298	Negligible	5	0.43
Wirt		80	1	298	Very low	5	0.32

Table 3. Soil Loss/Year (Tons & \$)

Soil Loss Total Till	Soil Loss Total No Till	Spring Till with Rye Cover Crop	No-Till with Rye Cover Crop
tons/acre/year	tons/acre/year	tons/acre/year	tons/acre/year
56	14	8.3	7.6
56	14	8.4	6.7
18.9	5.4	1.5	1.2
292.5	36.4	0.5	0.42
159.95	50.27	1	0.83
48	14.8	0.33	0.27
380	100	4.3	3.4
35.36	11.288	0.75	0.62
121.73	39.48	1	1.85
1168.44	285.638	26.08	21.89
\$7.03	\$7.03	\$7.03	\$7.03
\$8,214.13	\$2,008.04	\$366.68	\$307.77

## Final Solution

Our project will reach its maximum impact by using cover crops on the entirety of the field while also not tilling up the ground at all. It will cost the customer more per year buying seed in order to put cover crops in, but the farmer is going to have to accept that in order to maximize the amount of soil that they can keep inside the field. Our project is very specific to the Vollmer Family Farm, but the idea of our calculations that show how much cover crops and no tillage practices do for erosion puts it into perspective for a farmer to know how much they are really losing by farming the way that they do.

