

Class Worksheet - Soil Health & Sustainability for Field Staff

NAME: _____ Training Location: _____

Intro to Soil Health

- Discuss common regional cropping systems and then describe state prioritized scenarios to be used throughout course.
- Break into groups and assign scenarios.

Soil Biology

- Think about the five biological hot spots and your scenario and answer these 2 questions

1. Identify which hot spot(s) you think are the most limiting and which organisms you think will be the most impacted (negatively)

2. Is there a specific SH principle or manipulation approach you think could help change the soil biome to improve SH & function in your system? Briefly describe which one might apply best.

Soil Health Principles and Soil Function

- Identify the principles that already are part of the system and those that might be added. Using your scenario, which conservation practices might be considered to either implement or improve SH principles?

Principles	
Present:	Missing:
Practices	

Resource Concerns and Soil Health Indicators

- Answer the following 4 questions
1. Which inherent soil properties important for soil health management planning can you identify prior to the field visit?

2. Which resource concerns might be present?

3. Which key questions or observations are needed to help identify the presence of a resource concern?

4. Which indicators are likely to be most useful with your scenario and time of year?

Ecological Management

- Provide short- and long-term insight into expected changes with nutrient, water, and pest management as a SHMS is adopted.

1. Nutrients: Based on the proposed system changes, how might the producer need to think differently about nutrient cycling? For example: i) No longer incorporating fertilizers/manure, ii) Timing and delivery of nutrients with no-till, or iii) N immobilization following a high CN crop.

Anticipated Changes THIS Year
Changes over Longer Term

Ecological Management (cont.)

2. Water: Based on the proposed system changes, how might the producer need to think differently about water management? For example: i) Residue management and water delivery (e.g., flood/furrow), and ii) changes to infiltration and water movement across the soil surface and within the profile, and what that could mean to irrigation timing and rate

Anticipated Changes THIS Year
Changes over Longer Term

3. Pests: Based on the proposed system changes, how might the producer need to think differently about pest management? For example: i) how pesticides might affect soil organisms, and (ii) improved pest management and potential new challenges

Anticipated Changes THIS Year
Changes over Longer Term

Cover Crop

- Answer the following 6 questions

1. What is an entry level/basic cover crop system that you would recommend?

2. How would you modify this to gain additional SH and overall production benefit?

3. How can you help educate the client so that they are confident in adjusting their cover crop system to meet any future goals?

4. Where are the windows of opportunity for cover crops in your scenario?

5. How would termination be managed to achieve your goals?

6. What are the obstacles/challenges that may need to be overcome?

Grazing

- If you have a cropland scenario:

1. Will your scenario accommodate the integration of grazing animals? If yes, what type of livestock can be used? If no, why not?

2. What are the potential benefits to discuss with producer?

3. What are the obstacles/challenges?

- If you have a grazing scenario:

1. List all the potential management changes that could improve soil function.

2. Which ones would you recommend, and why?

Social and Economic Considerations

- Develop a list of short and long-term costs and benefits of core soil health improving practices- (e.g. risk, inputs, profitability, labor, management level)

1. What are the tradeoffs with your proposed management strategies?

Short Term Benefits	Short Term Costs
Long Term Benefits	Long Term Costs

2. What are the potential risks with adopting each of these management strategies?

Short Term Risk	Long Term Risk

3. What might be some other social/personal benefits that are not easily quantified? What is it that keeps people from implementing management changes? How have adopters overcome obstacles?

Strategizing and implementing the Soil Health Management System.

- Think about what a soil health management system might look like for your scenario and answer the following 3 questions.

1. How might tillage, use of cover crops, crop rotation and nutrient management be different than in the current scenario?

2. How can the C:N of the cash crops be used to improve soil health in your new system?

3. What equipment challenges and opportunities do you foresee?

Soil Health Management Plan

Consolidate all the information considered on this worksheet and develop a soil health improving strategy for the scenario. Use this sheet to present your plan to the class. Consider the following when developing your plan:

- Soil health principles and associated conservation practices that may be present and those that could be implemented (Principles)
- Soil health resource concerns that will be addressed by your plan (Resource Concerns)
- The effects of current and proposed management on soil organic carbon and biology (Soil Biology)
- How proposed changes may affect water, nutrient and pest management (Ecological Management)
- Where cover crops could be implemented in the system (Cover Crop)
- How grazing could be introduced or improved (Grazing)
- The economic and social costs and benefits of current and proposed systems (Social & Economic)

1. Narrative: Highlights of the current crop & livestock system, management level and goals.

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2. Soil Suitability and Limitations & Resource Concerns: Discuss the inherent soil properties and how you might use the data to identify potential soil health resource concerns.

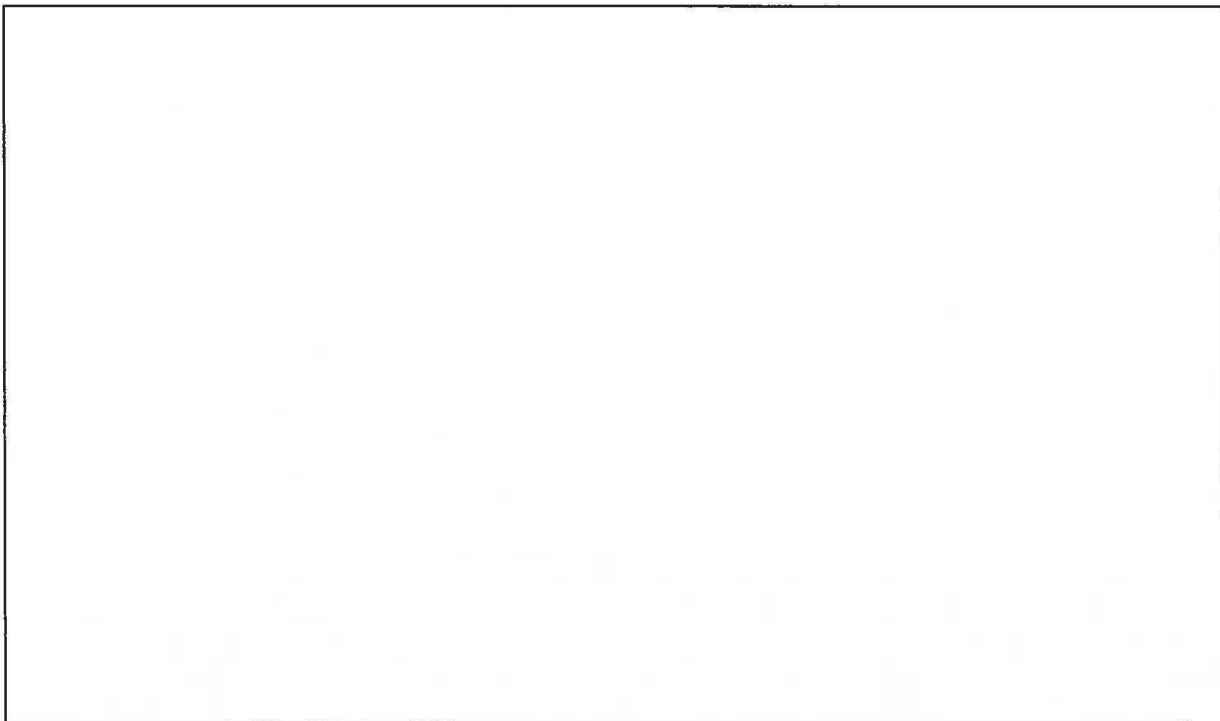
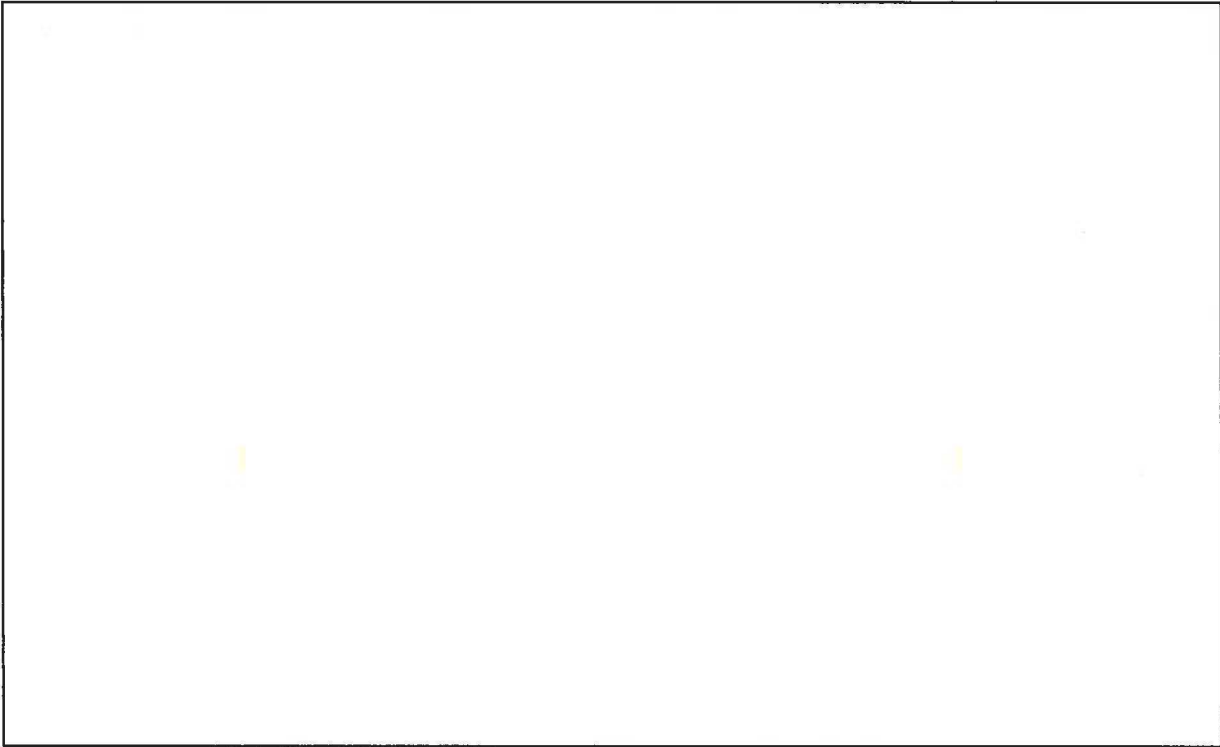
Soil:	
Suitability	Limitation
Soil health resource concerns identifiable from scenario and soil characteristics:	

3. Identify the primary recommended practices. What will be the effect of the practices on achieving the principles, promoting the health of the biological community and addressing the resource concerns?

Minimize disturbance: <i>Protect Habitat & SOM</i> Practices:	No Action:
	Effect:
Maximize Soil Cover: <i>Protect Habitat & SOM</i> Practices:	No Action:
	Effect:
Maximize Biodiversity: <i>Feed Biota Diverse Food Source</i> Practices:	No Action:
	Effect:
Maximize Living roots: <i>Feed Biota Continuous Food</i> Practices:	No Action:
	Effect:

4. Use the table on pages 11 and 12 to list the details of your proposed alternative by year and field.

5. **Summarize the plan:** Use the information from the table on the following pages to discuss how the plan will be implemented. Be sure to include proposed practices, changes in management, and the economic and social aspects. Also, summarize the potential benefits of the new system. Discuss implementation in the short term (1 yr) and longer term (5 yr).



Year (1-5)	Field	Season/Crop/Rotation	Practice or BMP	Scenario Details and Implementation Instructions (BE SPECIFIC)	Monitoring
1	1	Fall, Corn → Soybean	Cover Crop (340)	Aerial seed cereal rye at 110 lb/ac 2-3 weeks before harvest	Seed germ/sq. ft in fall, allow rye to grow to 18 in tall in spring



Year (1-5)	Field	Season/Crop/Rotation	Practice or BMP	Scenario Details and Implementation Instructions (BE SPECIFIC)	Monitoring

Conservation Plan Farm 2278 Tract 10348



Date: 6/21/2018

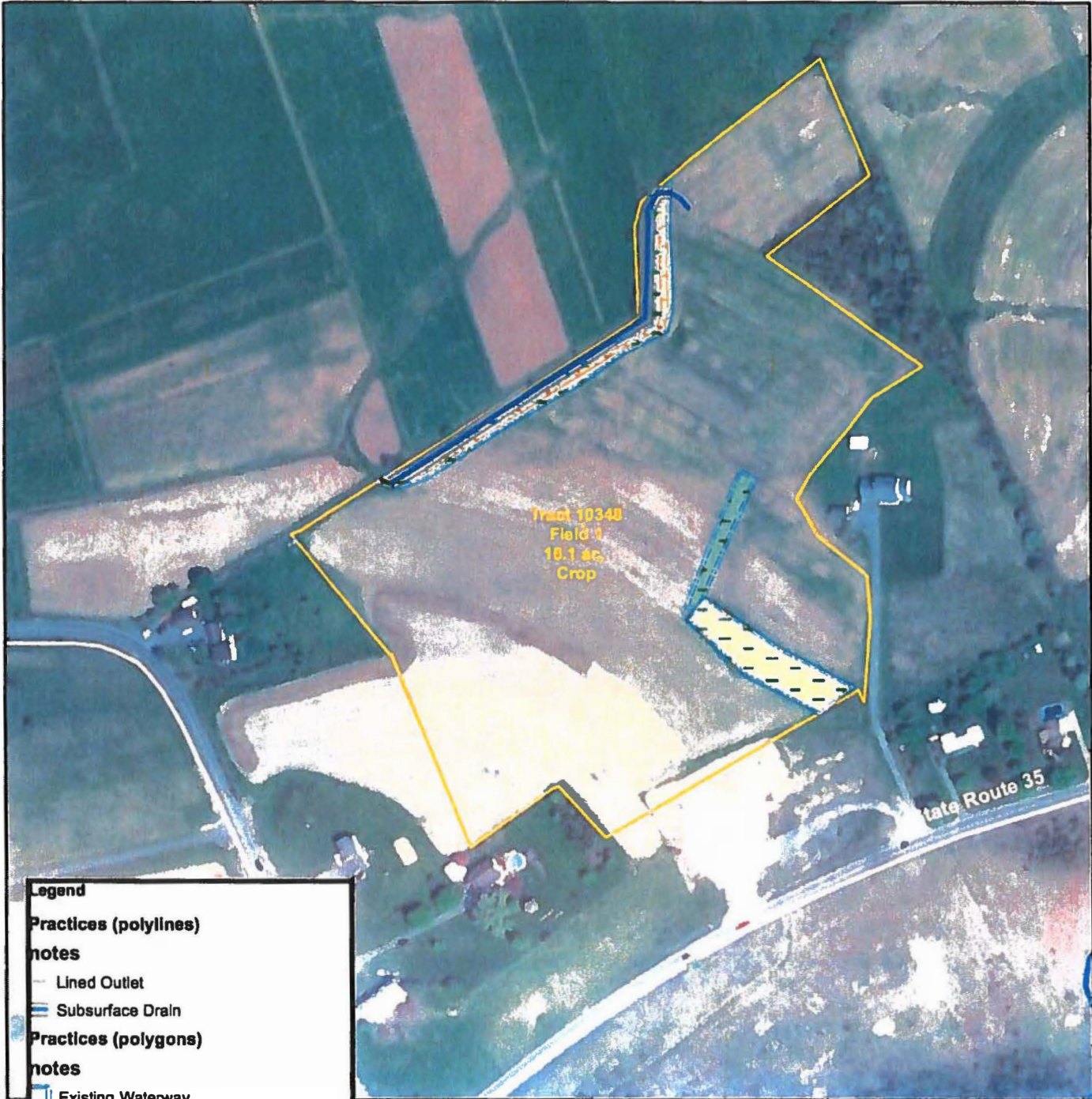
Customer(s): BRUBAKER CRYSTAL SPRING FARM

District: JUNIATA COUNTY CONSERVATION DISTRICT

Field Office: MIFFLINTOWN SERVICE CENTER

Agency: USDA - NRCS

Assisted By: MELISSA ERDMAN



Legend

Practices (polylines)

notes

— Lined Outlet

— Subsurface Drain

Practices (polygons)

notes

Existing Waterway

Grassed Waterway, Planned Constructed

Grassed Waterway, Plow Skip/Natural

Mulching, Erosion Control Blanket

T10348

Roads

Streams

Prepared with assistance from USDA-Natural Resources Conservation Service

250

0

250

Feet

N

