Best Management Practices to Protect Water Quality at Horse Facilities: Managing Rain, Mud, and Manure
Maggie Sepulveda
Soil Conservation Technician with NRCS
Been with NRCS since 2006.
In Petaluma since 2015.
Most importantly, I’ve been riding since I was 10 years old and have owned my 27 year old Morgan, Toby, for almost 20 years now.
Who is NRCS?

- NRCS stands for “Natural Resources Conservation Service” and is a federal agency under the United States Department of Agriculture (USDA).

- NRCS was created in 1935 and back then was called the “Soil Conservation Service”. The federal government realized the need for an agency to give voluntary advice and technical assistance to farmers and ranchers because of the devastating effects of the dust bowl.
What Does NRCS Do?

• NRCS is a voluntary agency.

• NRCS offers free, science-based advice to farmers, ranchers, and private forestland owners.

• NRCS is non-regulatory and your information is confidential.

• NRCS helps create a conservation plan for your individual operation which can then be eligible for financial assistance to implement.

• NRCS has a number of professional scientific advisors within the agency including:
  - Soil Conservationists
  - Rangeland Specialists
  - Agriculture Engineers
  - Civil Engineers
  - Wildlife Biologists
  - Forest Specialists
  - Wetland Specialists
  - Soil Scientists
  - Agronomists
  - Air Quality Specialists
  - Archeologists
  - Geologists and more!
What is a NRCS Conservation Plan?

• A conservation plan is the record of decisions and supporting information for treatment of a unit of land meeting planning criteria for one or more identified natural resource concerns as a result of the planning process. The plan describes the schedule of implementation for practices and activities needed to solve identified natural resource concerns and takes advantage of opportunities.

• A Comprehensive Nutrient Management Plan (CNMP) is a component of your conservation plan!
  • More on this later...

• During the planning process we will:
  • Consider the needs and capabilities of each acre within the plan
  • Consider the client’s facilities, machinery, and economic situation
  • Incorporate the client’s willingness to try new practices
  • Consider the land’s relationship to the entire farm, ranch, or watershed
  • Ensure the conservationist’s presence out on the land
Types of NRCS Assistance

NRCS works with private farmers, ranchers and non-industrial forest landowners across the country to help conserve natural resources.

Technical assistance –
- Conservation Technical Assistance (CTA):
  - Offers expertise, technical planning, documentation, engineering, etc.
  - Does not offer funding to clients

Financial assistance –
- Offer financial assistance to applicant in control of land (by deed, lease, or agreement)
- Financial assistance is contractual
- Financial assistance is only available for agricultural lands and forestlands
The NRCS Lens – “Resource Concerns”

NRCS National Planning and Procedures Handbook (NPPH)

Natural resources are defined by NRCS to include soil, water, air, plants, animals, energy and human considerations (SWAPAE +H)

Resource Concern—“An expected degradation of the soil, water, air, plant, or animal resource base to the extent that the sustainability or intended use of the resource is impaired.” – NPPH

**In order for an on-the-ground practice or treatment to receive financial assistance in an NRCS contract, it must be shown to be treating (or improving) an NRCS resource concern, or be part of a series or suite of practices that do so.
NRCS Resource Concerns

- **Soil Erosion**
  - Sheet, Rill, & Wind Erosion
  - Concentrated Flow Erosion
  - Excessive bank erosion from streams, shorelines, or water conveyance channels

- **Soil Quality Degradation**
  - Subsidence
  - Compaction
  - Organic Matter Depletion
  - Concentration of Salts or other Chemicals

- **Excess Water**
  - Ponding, flooding, seasonal high water table, seeps, and drifted snow

- **Insufficient Water**
  - Inefficient Moisture Management
  - Inefficient Use of Irrigation Water

- **Livestock Production Limitations**
  - Inadequate Feed and Forage
  - Inadequate Livestock Shelter
  - Inadequate Livestock Water

- **Inefficient Energy Use**
  - Equipment and Facilities
  - Farming/Ranching Practices and Field Operation

- **Water Quality Degradation**
  - Excess nutrients in surface and ground waters
  - Pesticides transported to surface and ground waters
  - Excess pathogens and chemicals from manure, biosolids or compost applications
  - Excessive salts in surface water and ground waters
  - Petroleum, heavy metals and other pollutants transported to receiving waters
  - Excessive Sediment in Surface Water
  - Elevated Water Temperature

- **Air Quality Impacts**
  - Emissions of Particulate Matter (PM) and PM Precursors
  - Emission of Greenhouse Gases (GHGs)
  - Emissions of Ozone Precursors
  - Objectionable Odors

- **Degraded Plant Condition**
  - Undesirable Plant Productivity and Health
  - Inadequate Structure and Composition
  - Excessive Plant Pest Pressure
  - Wildfire Hazard, Excessive Biomass Accumulation

- **Inadequate Habitat for Fish and Wildlife**
  - Habitat Degradation (food, water, cover/shelter, habitat continuity)
Does this look familiar?
Or this?
Or maybe this?
What parts of animal cause impacts?

• Mouths - eat grass, fences and facility
• Hooves – soil and vegetation trampling
• Bodies – weight compacts soil, transport weeds
• Manure – water quality, potential pollution source
Hoof Impact

- On pastures
  - Compaction
  - Trailing
  - Reduced productivity

- On stream banks
  - Trampling
  - Erosion
  - Pollution
Impacts From Manure

• Polluted Run-off
• Insects and parasites
• Odor
• Dust
How Do We Avoid These Impacts?

• Manage manure
• Control run-off
• Avoid over stocking in sensitive areas
• Livestock exclusions
• Rotate pastures
Horse Manure Production

• 1 horse = ~ 1000 pounds each
  • WEIGHT: 50 lbs/day
  • VOLUME: .81 cubic feet/day

• WEIGHT: 50 lbs/day x 30 days/month x 3 months = 4500 pounds of manure

• VOLUME: 0.81 cu ft/day x 30 days/month x 3 months = 73 cubic feet of manure
## How Much Manure Will Your Animals Produce?

<table>
<thead>
<tr>
<th>Animal</th>
<th>Volume (cu ft/day)</th>
<th>Weight (lbs/day)</th>
<th>Moisture Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef</td>
<td>1.02</td>
<td>63</td>
<td>88</td>
</tr>
<tr>
<td>Ducks</td>
<td>0.73</td>
<td>46</td>
<td>75</td>
</tr>
<tr>
<td>Goats</td>
<td>0.63</td>
<td>40</td>
<td>75</td>
</tr>
<tr>
<td>Horse</td>
<td>0.81</td>
<td>50</td>
<td>78</td>
</tr>
<tr>
<td>Sheep</td>
<td>0.63</td>
<td>40</td>
<td>75</td>
</tr>
</tbody>
</table>
Manure Storage

- Potential Run-Off Barrier
- Small Storage
- Large Covered Storage
- Roll Off Storage
Manure Storage Considerations

• Distance from streams, ponds, wells, and waterways
• Prevailing wind direction
• Slope of ground
• Soil type
Best Management Practices (BMP) to Avoid Negative Impacts

• Roof Runoff Structures (gutters)
• Buffer/Filter Strips
• Grassed Waterways
• Sediment Basins
• Animal Trails and Walkways
• Exclusionary Livestock Fencing
• Grazing Systems and Pasture Configurations
• Heavy Use Area Protection
Roof Runoff Management

• Gutters that are sized appropriately

• Diversions to prevent water from flowing through manure and sediment

• Buffers/Filter Strips

• Slow it! Spread it! Sink it!
Filter Strips
Grassed Waterway

Before

During (showing grade stabilization)

After
Lined Waterway
Lined Waterway
Sediment Basin
Animal Trails and Walkways

Before

During

After
Critical Area Planting

Before

During

After
Grade Stabilization Structure

Before

After
Managed Grazing Benefits

• Reduces erosion
• Improves water quality
• Improves range or pasture condition
• Increases forage production
• Increases grazing capacity
• Allows seed production of key grass species
• Maximizes efficiency of your time and resources
Steps to Effective Grazing Management

- Graze to the desired grass stubble height (take half, leave half)
- Allow adequate rest periods
- Don’t regraaze a pasture until your key species has reached the desired height
Which Will Cause More Overgrazing?

The stocking rate of both paddocks is identical: 100 Animal Days per acre. The effect on the paddocks will be much different.
Grazing and Rest Periods

Before making decisions about grazing periods, know how much rest is needed:

• Walk the pastures that animals have already grazed to evaluate regrowth

• If grass has grown a couple of inches in 1 to 2 weeks, plan relatively short rest periods (30-45 days)

• If not much regrowth has occurred in 1 to 2 weeks, plan for longer rest (60-120 days)
Ways NRCS Can Help Equine Facilities

• Free Technical Advice

• Financial Assistance for a Comprehensive Nutrient Management Plan (CNMP)
  • What is a CNMP? Next slide!

• Financial Assistance to help make structural and/or vegetative improvements as identified in the CNMP
  • Roof Runoff Structures, Filter Strips, Sediment Basins, Concrete Pads, etc.
What is a Comprehensive Nutrient Management Plan (CNMP)?

A Comprehensive Nutrient Management Plan (CNMP) is a component of the conservation plan that is unique to animal feeding operations. The objective of a CNMP is to document the Animal Feeding Operation (AFO) owner's and/or operator's plan to manage water, manure and organic by-products by combining conservation practices and management activities into a conservation system that will help achieve the goals of the producer, control soil erosion, and protect or improve water and air quality.

- A CNMP will focus on the management of nutrients (organic or synthetic)
- Includes an estimated manure & fertilizer distribution plan.
- Does NOT try to precisely predict the actual amount of manure or nutrients that should be applied.
  - NRCS does NOT do prescriptive recommendations.
- Includes an implementation plan (Record of Decision) for structural and/or management practices associated with crop or livestock production areas to ensure that the purposes of crop or livestock production and the preservation of natural resources are compatible
- Does NOT include designs for facility / infrastructure improvements.
When Is A CNMP Required

- **EQIP Manual (M_440_515_I, Amend. 110, January 2017)**
  - “If an EQIP schedule of operations includes animal waste storage or treatment facility on an animal feeding operation (AFO), the participant must develop and provide a copy of a NRCS approved CNMP prior to implementation of any waste storage and handling facility or nutrient management activities.”

- **CNMP Policy (GM_190_405_B, Amend. 31, October 2015)**
  - “Prepare a CNMP when NRCS or NRCS-designated agents are providing technical or financial assistance to an AFO/CAFO to address manure or wastewater handling and storage, treatment and nutrient management that involves the application of manure and wastewater associated with the AFO/CAFO.”
Resource Concerns

- Soil Erosion
- Water Quality
- Air Quality
CNMP Format

• The client copy:
  • Signature Page
  • Section 1, Farmstead/Production Area
  • Section 2, Crop, Forest, Range, and Pasture Lands/Land Treatment Area
  • Section 3, Nutrient Management Plan
    (NRCS Conservation Practice Standard 590)
CNMP Format

• Signature Page to include:
  • Contains basic information about the farm
    • Name, Address, Plan Period, Total Acres
  • Client Signature
  • CNMP Planner
    • NRCS certified CNMP Planner – OR –
    • CAP 102 – CNMP Technical Service Provider
  • Professional Engineer licensed in California
What is a TSP?

• **TSP = Technical Service Provider**

  • Non-USDA third party providers of technical assistance
  • Work on NRCS’ behalf to provide conservation planning
  • Individuals or businesses with technical expertise in conservation planning and design for conservation activities
  • TSPs are hired by farmers, ranchers, private businesses, nonprofit organizations, or public agencies to provide services on behalf of the Natural Resources Conservation Service (NRCS).


TSP ~ ‘Subcontractor’ of NRCS
Farmstead

- “Ensure that all necessary engineering work is properly documented with necessary signatures.”
- Signature of Professional Engineer licensed in California REQUIRED
Farmstead (Section 2)

- Record of Decisions
- Conservation Plan Map
- Soils Map(s) and Descriptions
- Brief Description of the AFO
  - Animal Inventory
  - Manure Storage
- Planned Imports, Exports, and On-Farm Transfers
- Reference Implementation Requirements / Engineering Plans
Farmstead

- Record of Decisions
- We’ll Cover Later
Farmstead

• Conservation Plan Map
  • One map covering all CNMP components or multiple maps covering land use areas separately
  • May include a supporting farmstead map with livestock support facilities and features to complement description of AFO (this example)

• Soils Map(s) and Descriptions
  • One map covering all CNMP components or multiple maps covering land use areas separately
Farmstead

- Brief Description of the AFO
- Narrative
- Table Format

- Planned Imports, Exports, and On-Farm Transfers
  - If Applicable (Not Shown)
Farmstead

- Reference Implementation Requirements or Engineering Plans
- Practices Already Implemented
Farmstead

• Record of Decisions
  • How were these decisions made?
Farmstead

• The Conservation Planning Process
  • It’s not all in the plan document
  • Plan should only contain meaningful and useful information to the client – Everything else in NRCS Case File including
    • Forms and Worksheets
    • Inventory and Analysis
      • Assessments
Farmstead

- Assessment Tools
- Waste Storage Pond Capacity Evaluation
Farmstead

• Assessment Tools
  • National Air Quality Site Assessment Tool (NAQSAT)
    • NI_190_309, 2nd Ed., July 2015
    • Required for confined animal operations 300+ AU
    • Encouraged for confined animal operations <300 AU
    • Develop baseline and plan mitigation measures
Section 3 Crop, Pasture, Range, other Lands (Land Treatment)

- Plan Map(s)
- Soil Map(s)
- Record of Decisions
- Assessments
  - Predicted Soil Erosion *
  - Air Quality
  - Other
- Implementation Requirements (IRs)

* TSPs just data collection, if needed
Crop, Pasture, Range, other Lands (Land Treatment)

- Plan Map(s)
  - Show existing and proposed practices
  - Shows all of the planning area
- Not necessary to duplicate if already addressed
Crop, Pasture, Range, other Lands (Land Treatment)

• Soil Map(s)
  • Soil Descriptions

• Other Resource Maps (as needed)
  • Wetlands / water bodies, Karst
  • Topography
  • Populated facilities (residence, schools, parks, etc.

Not necessary to duplicate if already addressed
Crop, Pasture, Range, other Lands (Land Treatment)

- Record of Decisions
  - We’ll Cover Later
Crop, Pasture, Range, other Lands (Land Treatment)

- Assessment Tools
  - RUSLE2
Crop, Pasture, Range, other Lands (Land Treatment)

- Assessment Tools
  - RUSLE2
  - National Air Quality Site Assessment Tool (NAQSAT)
  - Other (as needed)
Crop, Pasture, Range, other Lands (Land Treatment)

- Implementation Requirements
  - Include if part of the assessment process

<table>
<thead>
<tr>
<th>Producer</th>
<th>Location</th>
<th>Project or Contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Doe</td>
<td>Hoxton, TN</td>
<td>Maroon</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project</th>
<th>County</th>
<th>Tract Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tract</td>
<td></td>
<td>1234</td>
</tr>
</tbody>
</table>

[Cover Crop Implementation Requirements form]

<table>
<thead>
<tr>
<th>Practice Location Map</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish cover crops after corn silage on all crop fields</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Implementation Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Properly establish cover crops on all crop fields</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Soil type: Loam</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operation &amp; Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Maintenance schedule</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Utility Safety / One-Call System Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Contact information</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Approval status: Approved</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Designated BY</th>
<th>Checked BY</th>
<th>Approved BY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norman Wilson</td>
<td>Robert</td>
<td>Norman Wilson</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/26/2015</td>
</tr>
</tbody>
</table>

NRCS Review Only

<table>
<thead>
<tr>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/26/2015</td>
</tr>
</tbody>
</table>

NRCS
February 2013 Page 1 of 3
### 346 - Cover Crop Implementation Requirements

**The Practice Purpose(s):**

- Reduce erosion from wind and water.
- Increase soil organic matter content.
- Capture and recycle or redistribute nutrients in the soil profile.
- Promote biological nitrogen fixation and reduce energy input.
- Increase biodiversity.
- Suppress weeds.
- Manage soil moisture.
- Minimize and reduce soil compaction.

**Seeding and Management:** Fill in the following table with the appropriate cover crop information for each field:

<table>
<thead>
<tr>
<th>Field #</th>
<th>Acres</th>
<th>Species</th>
<th>Seeding rate (lbs/acre)</th>
<th>Seeding date range</th>
<th>Seeding method</th>
<th>Termination date or stage</th>
<th>Termination method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, 5</td>
<td>66.9</td>
<td>Rye</td>
<td>80</td>
<td>Sept</td>
<td>No Till Drill</td>
<td>Harvest Stage Applied</td>
<td>Chemical Kill</td>
</tr>
<tr>
<td>3, 4, 6, 7</td>
<td>127.7</td>
<td>Rye</td>
<td>80</td>
<td>Sept</td>
<td>No Till Drill</td>
<td>1 wk Prior Plant Corn</td>
<td>Chemical Kill</td>
</tr>
</tbody>
</table>

### Additional specifications:

**OPERATION AND MAINTENANCE**

- Control growth of the cover crop to reduce competition from volunteer plants and weeds.
- Control weeds in cover crops by mowing or by using other post-management techniques.
- Control soil erosion by selecting water efficient plant species and terminating the cover crop before excessive transpiration.

- Evaluate the cover crop to determine if the cover crop is meeting the planned purpose(s). If the cover crop is not meeting the purpose(s) adjust the management, change the species of cover crop, or utilize a different technology.

---

**Soil Amendments:** If needed, apply soil amendments prior to seedbed preparation or before seeding if a no-till drill is used.

<table>
<thead>
<tr>
<th>Field</th>
<th>N fertilizer needed (lbs/acre)</th>
<th>K2O fertilizer needed (lbs/acre)</th>
<th>P2O5 fertilizer needed (lbs/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>
Crop, Pasture, Range, other Lands (Land Treatment)
Implementation Requirements

• Implementation Requirements for inclusion in plan
  • Nutrient Management,
  • Residue & Tillage Management
  • Cover practices,
  • Tillage practices,
  • Etc.

• Implementation Requirements not generally included in plan
  • Engineering practices
Nutrient Management Plan

- Effective, understandable and helpful plans
- Fair balance of production and environmental interests
Nutrient Management Plan

• Risk Analyses (Soil Erosion, Nitrogen, and Phosphorous)
• Manure Application Setback Distances
• Soil Test Data
• Manure Nutrient Analyses
• Planned Crops, Fertilizer Recommendations, Nutrient Applications
• Field Nutrient Balance
• Annual Summary – Manure Inventory
• Annual Summary – Fertilizer Material
• Plan Nutrient Balance
Nutrient Management Plan

- Risk Analyses Results
- Soil Erosion
- Nitrogen
- Phosphorous

Implementation Requirements
Nutrient Management (Code 590)

Nitrogen and Phosphorus Risk Analyses

Tennessee Phosphorus Index

<table>
<thead>
<tr>
<th>Field</th>
<th>Crop Year</th>
<th>Site and Transport Factor</th>
<th>Mgmt and Source Factor</th>
<th>P Index w/o P Apps</th>
<th>P Index w/ P Apps</th>
<th>P Low Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2008</td>
<td>13</td>
<td>2</td>
<td>26</td>
<td>26</td>
<td>Low</td>
</tr>
<tr>
<td>1</td>
<td>2009</td>
<td>13</td>
<td>2</td>
<td>26</td>
<td>26</td>
<td>Low</td>
</tr>
<tr>
<td>1</td>
<td>2010</td>
<td>13</td>
<td>2</td>
<td>26</td>
<td>26</td>
<td>Low</td>
</tr>
<tr>
<td>2</td>
<td>2008</td>
<td>13</td>
<td>2</td>
<td>26</td>
<td>26</td>
<td>Low</td>
</tr>
<tr>
<td>2</td>
<td>2009</td>
<td>13</td>
<td>2</td>
<td>26</td>
<td>26</td>
<td>Low</td>
</tr>
<tr>
<td>2</td>
<td>2010</td>
<td>13</td>
<td>2</td>
<td>26</td>
<td>26</td>
<td>Low</td>
</tr>
<tr>
<td>3</td>
<td>2008</td>
<td>6</td>
<td>4</td>
<td>24</td>
<td>24</td>
<td>Low</td>
</tr>
<tr>
<td>3</td>
<td>2009</td>
<td>6</td>
<td>4</td>
<td>24</td>
<td>24</td>
<td>Low</td>
</tr>
<tr>
<td>3</td>
<td>2010</td>
<td>6</td>
<td>4</td>
<td>24</td>
<td>24</td>
<td>Low</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>6</td>
<td>20</td>
<td>24</td>
<td>120</td>
<td>Medium</td>
</tr>
<tr>
<td>4</td>
<td>2009</td>
<td>6</td>
<td>20</td>
<td>24</td>
<td>120</td>
<td>Medium</td>
</tr>
<tr>
<td>4</td>
<td>2010</td>
<td>6</td>
<td>20</td>
<td>24</td>
<td>120</td>
<td>Medium</td>
</tr>
<tr>
<td>5</td>
<td>2008</td>
<td>15</td>
<td>27</td>
<td>120</td>
<td>405</td>
<td>Very High</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>15</td>
<td>27</td>
<td>120</td>
<td>405</td>
<td>Very High</td>
</tr>
<tr>
<td>5</td>
<td>2010</td>
<td>15</td>
<td>27</td>
<td>120</td>
<td>405</td>
<td>Very High</td>
</tr>
<tr>
<td>6a</td>
<td>2008</td>
<td>15</td>
<td>18</td>
<td>60</td>
<td>270</td>
<td>High</td>
</tr>
<tr>
<td>6a</td>
<td>2009</td>
<td>15</td>
<td>18</td>
<td>60</td>
<td>270</td>
<td>High</td>
</tr>
<tr>
<td>6a</td>
<td>2010</td>
<td>15</td>
<td>18</td>
<td>60</td>
<td>270</td>
<td>High</td>
</tr>
</tbody>
</table>
Nutrient Management Plan

- Risk Analyses Results
- Soil Erosion
- Nitrogen
- Phosphorous

Implementation Requirements
Nutrient Management (Code 590)

Nitrogen and Phosphorus Risk Analyses

Tennessee Phosphorus Index

<table>
<thead>
<tr>
<th>Field</th>
<th>Crop Year</th>
<th>Site and Transport Factor</th>
<th>Mgmt and Source Factor</th>
<th>P Index w/o P Apps</th>
<th>P Index w/P Apps</th>
<th>P Low Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2008</td>
<td>13</td>
<td>2</td>
<td>25</td>
<td>25</td>
<td>Low</td>
</tr>
<tr>
<td>1</td>
<td>2009</td>
<td>13</td>
<td>2</td>
<td>25</td>
<td>25</td>
<td>Low</td>
</tr>
<tr>
<td>1</td>
<td>2010</td>
<td>13</td>
<td>2</td>
<td>25</td>
<td>25</td>
<td>Low</td>
</tr>
<tr>
<td>2</td>
<td>2008</td>
<td>13</td>
<td>2</td>
<td>25</td>
<td>25</td>
<td>Low</td>
</tr>
<tr>
<td>2</td>
<td>2009</td>
<td>13</td>
<td>2</td>
<td>25</td>
<td>25</td>
<td>Low</td>
</tr>
<tr>
<td>2</td>
<td>2010</td>
<td>13</td>
<td>2</td>
<td>25</td>
<td>25</td>
<td>Low</td>
</tr>
<tr>
<td>3</td>
<td>2008</td>
<td>6</td>
<td>4</td>
<td>24</td>
<td>24</td>
<td>Low</td>
</tr>
<tr>
<td>3</td>
<td>2009</td>
<td>6</td>
<td>4</td>
<td>24</td>
<td>24</td>
<td>Low</td>
</tr>
<tr>
<td>3</td>
<td>2010</td>
<td>6</td>
<td>4</td>
<td>24</td>
<td>24</td>
<td>Low</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>5</td>
<td>20</td>
<td>24</td>
<td>120</td>
<td>Medium</td>
</tr>
<tr>
<td>4</td>
<td>2009</td>
<td>5</td>
<td>20</td>
<td>24</td>
<td>120</td>
<td>Medium</td>
</tr>
<tr>
<td>4</td>
<td>2010</td>
<td>5</td>
<td>20</td>
<td>24</td>
<td>120</td>
<td>Medium</td>
</tr>
<tr>
<td>5</td>
<td>2008</td>
<td>15</td>
<td>27</td>
<td>120</td>
<td>405</td>
<td>Very High</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>15</td>
<td>27</td>
<td>120</td>
<td>405</td>
<td>Very High</td>
</tr>
<tr>
<td>5</td>
<td>2010</td>
<td>15</td>
<td>27</td>
<td>120</td>
<td>405</td>
<td>Very High</td>
</tr>
<tr>
<td>6a</td>
<td>2008</td>
<td>15</td>
<td>18</td>
<td>60</td>
<td>270</td>
<td>High</td>
</tr>
<tr>
<td>6a</td>
<td>2009</td>
<td>15</td>
<td>18</td>
<td>60</td>
<td>270</td>
<td>High</td>
</tr>
<tr>
<td>6a</td>
<td>2010</td>
<td>15</td>
<td>18</td>
<td>60</td>
<td>270</td>
<td>High</td>
</tr>
</tbody>
</table>
Nutrient Management Plan

• Manure Application Setback Distances

<table>
<thead>
<tr>
<th>Field</th>
<th>Distance to Water (Feet)</th>
<th>Slope Length (Feet)</th>
<th>Buffer Width (Feet)</th>
<th>Tillage/Cover Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>31</td>
<td>50</td>
<td>None</td>
<td>Pasture/Hay</td>
</tr>
<tr>
<td>2</td>
<td>101</td>
<td>50</td>
<td>None</td>
<td>Pasture/Hay</td>
</tr>
<tr>
<td>3</td>
<td>32</td>
<td>100</td>
<td>30</td>
<td>No-till w/ heavy residues</td>
</tr>
<tr>
<td>4</td>
<td>33</td>
<td>100</td>
<td>30</td>
<td>No-till w/ heavy residues</td>
</tr>
<tr>
<td>5</td>
<td>212</td>
<td>50</td>
<td>None</td>
<td>No-till w/ heavy residues</td>
</tr>
<tr>
<td>6a</td>
<td>350</td>
<td>50</td>
<td>None</td>
<td>No-till w/ heavy residues</td>
</tr>
<tr>
<td>6b</td>
<td>1,068</td>
<td>50</td>
<td>None</td>
<td>Pasture/Hay</td>
</tr>
<tr>
<td>7</td>
<td>31</td>
<td>100</td>
<td>30</td>
<td>Pasture/Hay</td>
</tr>
</tbody>
</table>
Nutrient Management Plan

• Soil Test Data
• Manure Nutrient Analyses

Soil Test Data

<table>
<thead>
<tr>
<th>Field</th>
<th>Test Year</th>
<th>OM (%)</th>
<th>P Test Used</th>
<th>P</th>
<th>K</th>
<th>Mg</th>
<th>Ca</th>
<th>Units</th>
<th>Soil pH</th>
<th>Buffer pH</th>
<th>CEC (meq/100g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2003</td>
<td></td>
<td>Mehlich-1</td>
<td>40</td>
<td>128</td>
<td></td>
<td></td>
<td>lbs/a</td>
<td>6.3</td>
<td>6.3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2003</td>
<td></td>
<td>Mehlich-1</td>
<td>40</td>
<td>128</td>
<td></td>
<td></td>
<td>lbs/a</td>
<td>6.3</td>
<td>6.3</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2003</td>
<td></td>
<td>Mehlich-1</td>
<td>76</td>
<td>198</td>
<td></td>
<td></td>
<td>lbs/a</td>
<td>7.0</td>
<td>7.0</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2003</td>
<td></td>
<td>Mehlich-1</td>
<td>120</td>
<td>340</td>
<td></td>
<td></td>
<td>lbs/a</td>
<td>6.4</td>
<td>6.4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2003</td>
<td></td>
<td>Mehlich-1</td>
<td>250</td>
<td>488</td>
<td></td>
<td></td>
<td>lbs/a</td>
<td>5.6</td>
<td>5.6</td>
<td></td>
</tr>
<tr>
<td>6a</td>
<td>2003</td>
<td></td>
<td>Mehlich-1</td>
<td>86</td>
<td>208</td>
<td></td>
<td></td>
<td>lbs/a</td>
<td>6.0</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>6b</td>
<td>2003</td>
<td></td>
<td>Mehlich-1</td>
<td>86</td>
<td>208</td>
<td></td>
<td></td>
<td>lbs/a</td>
<td>6.0</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>2003</td>
<td></td>
<td>Mehlich-1</td>
<td>362</td>
<td>688</td>
<td></td>
<td></td>
<td>lbs/a</td>
<td>6.0</td>
<td>6.0</td>
<td></td>
</tr>
</tbody>
</table>

Manure Nutrient Analyses

<table>
<thead>
<tr>
<th>Manure Source</th>
<th>Dry Matter (%)</th>
<th>Total N</th>
<th>NH₄-N</th>
<th>Total P</th>
<th>Total K</th>
<th>Ave. P₂O₅</th>
<th>Ave. K₂O</th>
<th>Units</th>
<th>Analysis Source and Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holding pond</td>
<td>10.0</td>
<td>5.0</td>
<td>3.0</td>
<td>12.5</td>
<td>3.0</td>
<td>12.5</td>
<td>Lab analysis 11/30/2003; no NH₄-N so assume 50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calf shed</td>
<td>6.1</td>
<td>1.2</td>
<td>2.3</td>
<td>2.7</td>
<td>2.3</td>
<td>2.7</td>
<td>MMP Estimate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Entered analysis may be the average of several individual analyses.
(2) Tennessee assumes that 100% of manure phosphorus and 100% of manure potassium is crop available. First-year per acre nitrogen availability for individual manure applications is given in the Planned Nutrient Applications table. For more information about nitrogen availability in Tennessee, see "Manure Application Management." Tables 3 and 4, Tennessee Extension, PB1510, 2/94 (http://westengtmgmt.utk.edu/Pubs/PB1510.pdf).
Nutrient Management Plan

- Planned Crops
- Realistic Yield Goals
- Fertilizer Recommendations

### Planned Crops and Fertilizer Recommendations

<table>
<thead>
<tr>
<th>Field</th>
<th>Crop Year</th>
<th>Planned Crop</th>
<th>Yield Goal (lb/acre)</th>
<th>N Rec</th>
<th>P2O5 Rec</th>
<th>K2O Rec</th>
<th>N Removed (lb/acre)</th>
<th>P2O5 Removed (lb/acre)</th>
<th>K2O Removed (lb/acre)</th>
<th>Custom Fertilizer Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2008</td>
<td>Corn silage</td>
<td>22.0</td>
<td>150</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>2009</td>
<td>Grass-clover hay new</td>
<td>4.0</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>2010</td>
<td>Grass-clover hay maint</td>
<td>6.0</td>
<td>60</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>2008</td>
<td>Corn silage</td>
<td>22.0</td>
<td>150</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>2009</td>
<td>Small grain cover*</td>
<td>4.0</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>2010</td>
<td>Corn silage</td>
<td>22.0</td>
<td>150</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>2009</td>
<td>Small grain cover*</td>
<td>4.0</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>2010</td>
<td>Corn silage</td>
<td>22.0</td>
<td>150</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>2009</td>
<td>Small grain cover*</td>
<td>4.0</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>2010</td>
<td>Corn silage</td>
<td>22.0</td>
<td>150</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Nutrient Management Plan

- Planned Nutrient Applications
- Manure-spreadable fields
Nutrient Management Plan

• Planned Nutrient Applications
• Fields not receiving manure

![Planned Nutrient Applications (Non-manure-spreadable Area)]
Nutrient Management Plan

- Field Nutrient Balance
- Manure-spreadable fields
- Fields not receiving manure
Nutrient Management Plan

- Annual Summary – Manure Inventory

<table>
<thead>
<tr>
<th>Manure Source</th>
<th>Plan Period</th>
<th>On Hand at Start of Period</th>
<th>Total Generated</th>
<th>Total Imported</th>
<th>Total Transferred In</th>
<th>Total Applied</th>
<th>Total Exported</th>
<th>Total Transferred Out</th>
<th>On Hand at End of Period</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holding pond</td>
<td>Sep '07 - Aug '08</td>
<td>450,000</td>
<td>1,244,000</td>
<td>0</td>
<td>0</td>
<td>1,234,600</td>
<td>0</td>
<td>0</td>
<td>459,400</td>
<td>Gal</td>
</tr>
<tr>
<td>Calf shed</td>
<td>Sep '07 - Aug '08</td>
<td>220</td>
<td>264</td>
<td>0</td>
<td>0</td>
<td>254</td>
<td>0</td>
<td>0</td>
<td>231</td>
<td>Ton</td>
</tr>
<tr>
<td>Holding pond</td>
<td>Sep '08 - Aug '09</td>
<td>459,400</td>
<td>1,244,000</td>
<td>0</td>
<td>0</td>
<td>1,234,400</td>
<td>0</td>
<td>0</td>
<td>469,000</td>
<td>Gal</td>
</tr>
<tr>
<td>Calf shed</td>
<td>Sep '08 - Aug '09</td>
<td>231</td>
<td>264</td>
<td>0</td>
<td>0</td>
<td>254</td>
<td>0</td>
<td>0</td>
<td>241</td>
<td>Ton</td>
</tr>
<tr>
<td>Holding pond</td>
<td>Sep '09 - Aug '10</td>
<td>469,000</td>
<td>1,244,000</td>
<td>0</td>
<td>0</td>
<td>1,232,200</td>
<td>0</td>
<td>0</td>
<td>480,800</td>
<td>Gal</td>
</tr>
<tr>
<td>Calf shed</td>
<td>Sep '09 - Aug '10</td>
<td>241</td>
<td>264</td>
<td>0</td>
<td>0</td>
<td>254</td>
<td>0</td>
<td>0</td>
<td>252</td>
<td>Ton</td>
</tr>
</tbody>
</table>
Nutrient Management Plan

- Annual Summary – Fertilizer Material

## Fertilizer Material Annual Summary

<table>
<thead>
<tr>
<th>Product Analysis</th>
<th>Plan Period</th>
<th>Product Needed Sep-Dec</th>
<th>Product Needed Jan-Aug</th>
<th>Total Product Needed</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-0-60</td>
<td>Sep '07 - Aug '08</td>
<td>8,648</td>
<td>0</td>
<td>8,648</td>
<td>Lbs</td>
</tr>
<tr>
<td>28-0-0</td>
<td>Sep '07 - Aug '08</td>
<td>0</td>
<td>6,115</td>
<td>6,115</td>
<td>Gal</td>
</tr>
<tr>
<td>33-0-0</td>
<td>Sep '07 - Aug '08</td>
<td>4,446</td>
<td>35,753</td>
<td>40,199</td>
<td>Lbs</td>
</tr>
<tr>
<td>0-0-60</td>
<td>Sep '08 - Aug '09</td>
<td>8,393</td>
<td>0</td>
<td>8,393</td>
<td>Lbs</td>
</tr>
<tr>
<td>28-0-0</td>
<td>Sep '08 - Aug '09</td>
<td>0</td>
<td>5,362</td>
<td>5,362</td>
<td>Gal</td>
</tr>
<tr>
<td>33-0-0</td>
<td>Sep '08 - Aug '09</td>
<td>4,446</td>
<td>36,637</td>
<td>41,083</td>
<td>Lbs</td>
</tr>
<tr>
<td>0-0-60</td>
<td>Sep '09 - Aug '10</td>
<td>3,510</td>
<td>0</td>
<td>3,510</td>
<td>Lbs</td>
</tr>
<tr>
<td>28-0-0</td>
<td>Sep '09 - Aug '10</td>
<td>0</td>
<td>5,326</td>
<td>5,326</td>
<td>Gal</td>
</tr>
<tr>
<td>33-0-0</td>
<td>Sep '09 - Aug '10</td>
<td>4,446</td>
<td>36,985</td>
<td>41,431</td>
<td>Lbs</td>
</tr>
</tbody>
</table>
**Nutrient Management Plan**

- Plan Nutrient Balance
- Manure-spreadable fields

### Plan Nutrient Balance (Manure-spreadable Area)

<table>
<thead>
<tr>
<th></th>
<th>N (lbf)</th>
<th>P2O5 (lb)</th>
<th>K2O (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Manure Nutrients at Start of Plan</td>
<td>3,642</td>
<td>1,895</td>
<td>612,19</td>
</tr>
<tr>
<td>Total Manure Nutrients Collected</td>
<td>47,152</td>
<td>32,085</td>
<td>48,38</td>
</tr>
<tr>
<td>Total Manure Nutrients Imported</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total Manure Nutrients Imported</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total Manure Nutrients in Storage</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total Manure Nutrients Applied to Farmland</td>
<td>6,342</td>
<td>2,021</td>
<td>6,169</td>
</tr>
<tr>
<td>Total Manure Nutrients Applied</td>
<td>41,604</td>
<td>31,093</td>
<td>48,909</td>
</tr>
<tr>
<td>Available Manure Nutrients (Utilized by plant crops)</td>
<td>20,962</td>
<td>15,367</td>
<td>48,38</td>
</tr>
<tr>
<td>Available Manure Nutrients (Utilized by plant crops)</td>
<td>2,021</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Commercial Fertilizer Nutrients Applied (Not utilized by plant crops)</td>
<td>4,375</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Commercial Fertilizer Nutrients Applied (Not utilized by plant crops)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Available Nutrients Applied (Manures and fertilizers utilized by plant crops)</td>
<td>25,416</td>
<td>22,303</td>
<td>48,909</td>
</tr>
<tr>
<td>Manure Utilization Potential</td>
<td>24,662</td>
<td>16,201</td>
<td>42,023</td>
</tr>
</tbody>
</table>

### Nutrient Balance of Spreadable Area

<table>
<thead>
<tr>
<th></th>
<th>N (%)</th>
<th>P2O5 (%)</th>
<th>K2O (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Nutrient Balance per Spreadable Area per Year</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

---

2. Indicates total manure nutrients present at the beginning of the plan.
3. Indicates total manure nutrients collected on the farm.
4. Indicates total manure nutrients imported from the farm for an annual basis.
5. Indicates total manure nutrients applied to farmland for an annual basis.
6. Indicates total manure nutrients stored or in storage at the end of the plan.
7. Indicates total manure nutrients utilized by plant crops for an annual basis.
8. Indicates total manure nutrients utilized by plant crops for an annual basis.
9. Indicates total manure nutrients utilized for commercial fertilizers and other commercial sources for an annual basis.
10. Indicates total manure nutrients utilized for commercial fertilizers and other commercial sources for an annual basis.
11. Indicates total manure nutrients utilized for commercial fertilizers and other commercial sources for an annual basis.
12. Indicates total manure nutrients utilized for commercial fertilizers and other commercial sources for an annual basis.
13. Indicates total manure nutrients utilized for commercial fertilizers and other commercial sources for an annual basis.
14. Indicates total manure nutrients utilized for commercial fertilizers and other commercial sources for an annual basis.
Nutrient Management Plan

- Plan Nutrient Balance
- Fields not receiving manure

### Plan Nutrient Balance (Non-manure-spreadable Area)

<table>
<thead>
<tr>
<th></th>
<th>N (lbs)</th>
<th>P-2O5 (lbs)</th>
<th>K-2O (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Fertilizer Nutrients Applied³</td>
<td>76,547</td>
<td>0</td>
<td>12,350</td>
</tr>
<tr>
<td>Nutrient Utilization Potential²</td>
<td>76,074</td>
<td>0</td>
<td>12,350</td>
</tr>
<tr>
<td>Nutrient Balance of Non-spreadable Acres²³</td>
<td>473</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Average Nutrient Balance per Non-spreadable Acre per Year²³</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

1. Values indicate nutrients applied as commercial fertilizers and nitrates contained in irrigation water.
2. Values indicate nutrient utilization potential of crops grown based on crop fertilizer recommendations.
3. Values indicate commercial fertilizer nutrients applied (row 3) minus crop nutrient utilization potential (row 2). Negative values indicate additional nutrient utilization potential and positive values indicate over application.
4. Values indicate average per acre nutrient balance. Values are calculated by dividing nutrient balance of non-spreadable acres (row 8) by number of non-spreadable acres in plan. Negative values indicate additional average per acre nutrient utilization potential and positive values indicate average per acre over-application.

* Non-trivial, positive values for N indicate that the plan was not properly developed. Negative values for N indicate additional nutrient utilization potential which may or may not be intentional. Positive values for P-2O5 and/or K-2O do not necessarily indicate that the plan was not developed properly. For example, multiple year applications may have been planned during the final plan year(s) and these nutrients will not be utilized by crops in the current plan. Negative values for P-2O5 and K-2O indicate that applications to some fields may have been delayed to allow the producer to apply the nutrients in accordance with their fertilization schedule.
Nutrient Management Plan

- Effective, understandable and helpful plans
- Fair balance of production and environmental interests
Contents – Case File

• Supporting Information kept in the case file:
  • In addition to NPPH Title 180 part 600.31 Section C include:
    • Conservation Plan and record of decisions (practice schedule) with planner, decision maker and other required signatures
    • Maps used in the CNMP / NMP development process—e.g. soils, map of farmstead, land treatment maps and any other maps needed to communicate existing and planned practices
    • Forms and worksheets used in developing and evaluating alternatives, notes and computations to support all practice design documentation
Contents – Case File

• Supporting Information kept in the case file:
  • In addition to NPPH Title 180 part 600.31 Section C include:
    • Inventory and analysis information (includes all resource concern assessments (e.g. erosion, N leaching index, P index, water quality assessments, livestock inventory, manure/waste estimated production, manure imports(exports, irrigation assessments, manure storage and evaluation of their integrity/capacity, site feasibility data if needed such as topographic survey, soil boring or flood zone info)
    • All completed implementation requirements/engineering plans
    • All electronic files used for design and nutrient management planning
    • Record keeping as appropriate
Contents – Case File

• Supporting Information kept in the case file:
  • Certain Assessments and budget need to run twice:
    • Based on current management and condition (to determine need for improvements)
    • To develop “planned” or future action to improve management
Communication is Key

• Site Visits are essential for a good quality CNMP
• Communication between involved parties
Financial Assistance from NRCS

• Financial assistance is available for implementing conservation practices identified in your conservation plan (or CNMP) when resource concerns will be improved.

• The most common program is the Environmental Quality Incentives Program (EQIP).

• The incentive payment rate is fixed.

• Applications are screened and ranked to ensure the projects with the most benefit are funded first.
Program Eligibility

• Applicant must be an agriculture producer
  • Equine facilities have always been a “gray” area since they do not fall under the four f’s of ag production (food, fiber, fuel, and forage) but they are a confined animal feeding operation with livestock

• Applicant must have control of the land (deed/lease)

• Comply with Adjusted Gross Income limitation (AGI) provisions ($900,000 ALL income for last 3 tax years)

• Socially disadvantaged, beginning and limited resource farmers, Indian tribes and veterans are eligible for an increased payment rate
Application Process

• Make an appointment with Heather Cuevas (contact info at the end of the presentation!) to complete or submit an application packet. Applications are accepted year round.

• NRCS planner will make an appointment for a site visit to assess resource concerns and potential projects.

• High/Medium ranked applications will be required to create/update farm records with Farm Service Agency.

• Once in “eligible” status, client will work with planner on a potential plan to be submitted for next funding selection (multiple batching periods throughout the year)
If NRCS is unable to help you, we probably know someone who can! We work with many different partners in the area!
Petaluma NRCS Field Office Contacts

Maggie Sepulveda, Soil Conservation Technician
(707) 794-1242 x114
Maggie.Sepulveda@ca.usda.gov

Heather Cuevas, Farm Bill Assistant
(707) 794-1242 x125
Heather.Cuevas@ca.usda.gov

Petaluma NRCS Service Center
5401 Old Redwood Hwy
Suite 100
Petaluma, Ca 94954
(707) 794-1242 x 3

www.ca.nrcs.usda.gov